The Journal
OF
Biological Chemistry

FOUNDED BY CHRISTIAN A. HERTER AND SUSTAINED IN PART BY
THE CHRISTIAN A. HERTER MEMORIAL FUND

EDITED FOR THE AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS

EDITORIAL BOARD

JOHN T. EDSALL, *Editor*
MANFRED L. KARNOVSKY, *Associate Editor*
KONRAD BLOCH, *Associate Editor*
ROBERT A. ALBERTY
CHRISTIAN B. ANFINSEN
H. A. BARKER
GEORGE B. BROWN
JOHN M. BUCHANAN
HALVOR N. CHRISTENSEN
SEYMOUR S. COHEN
MILDRED COHN
SIDNEY P. COLOWICK
LEWIS L. ENGEL
DAVID E. GREEN
W. Z. HASSID
LEON A. HEPPEL
HANS HIRSCHMANN
KLAUS HOFMANN
NORMAN H. HOROWITZ
MARTIN D. KAMEN
EUGENE P. KENNEDY
DANIEL E. KOSHLAND, JR.
HENRY A. LARDY
ALBERT L. LEHNINGER
FRED H. MATTSON
ALTON MEISTER
EFRAIM RACKER
SARAH RATNER
DAVID SHEMIN
SOFIA SIMMONDS
EMIL L. SMITH
EARL R. STADTMAN
HERBERT TABOR
PAUL TALALAY
HUBERT B. VICKERY
ROBERT C. WARNER
SIDNEY WEINHOUSE
LESLIE HELLERMAN, *Advisory Editor*

VOLUME 237, Numbers 1–3, Pages 1–978 (Jan.-Mar. '62)

BALTIMORE 1962

122202

XUM

COPYRIGHT, 1962
BY
THE AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, INC.

PUBLISHED AT HARVARD UNIVERSITY FOR
THE AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, INC.
WAVERLY PRESS, INC.
BALTIMORE 2, U. S. A.

UNIV OF MICH
LIBRARY

Contents of Volume 237

JANUARY 1962

CORRECTIONS 1

TORRIANI, ANNAMARIA, AND A. M. PAPPENHEIMER, JR. Inducible Polysaccharide Depolymerases of *Bacillus palustris* 3

BANERJEE, ARUN BARAN, AND N. C. GANGULI. Metabolic Studies on Scorbutic Guinea Pigs. II. Hepatic Glycogen Synthesis *in Vitro and in Vivo* 14

VOLK, WESLEY A. Purification and Properties of D-Arabinokinase from *Propionibacterium pentosaceum* 19

PETTENGILL, OLIVE S., AND WILLIAM H. FISHMAN. The Preparation and Purification of β-Glucuronidase from Mouse Liver, Kidney, and Urine 24

JOHNSTON, CLARE C., AND MERLE MASON. Tryptophan Metabolism: Formation of β-(8-Xanthurenyl)glucosiduronic Acid in the Rat and in Rat Kidney Slices 29

YUNIS, ADEL A., AND EDWIN G. KREBS. Comparative Studies on Glycogen Phosphorylase. II. Immunological Studies on Rabbit and Human Skeletal Muscle Phosphorylase 34

HUGHES, R. C., ADEL A. YUNIS, EDWIN G. KREBS, AND EDMOND H. FISCHER. Comparative Studies on Glycogen Phosphorylase. III. The Phosphorylated Site in Human Muscle Phosphorylase *a* 40

MARGOLIS, SIMEON, AND MARTHA VAUGHAN. α-Glycerophosphate Synthesis and Breakdown in Homogenates of Adipose Tissue 44

BROCKERHOFF, HANS, AND CLINTON E. BALLOU. Phosphate Incorporation in Brain Phosphoinositides 49

MATTSON, F. H., AND R. A. VOLPENHEIN. Rearrangement of Glyceride Fatty Acids during Digestion and Absorption 53

POPJÁK, G., J. W. CORNFORTH, RITA H. CORNFORTH, R. RYHAGE, AND DEWITT S. GOODMAN. Studies on the Biosynthesis of Cholesterol. XVI. Chemical Synthesis of 1-H_2^3-2-C^{14}- and 1-D_2-2-C^{14}-*trans-trans*-Farnesyl Pyrophosphate and Their Utilization in Squalene Biosynthesis 56

CHILDS, C. R., JR., AND KONRAD BLOCH. Further Observations on the Biosynthesis of Squalene 62

BAGLIONI, CORRADO. A Chemical Study of Hemoglobin Norfolk 69

BERNARDI, GIORGIO, AND GEORG F. SPRINGER. Properties of Highly Purified Fucan 75

BROWN, W. DUANE, MARINO MARTINEZ, MARGERY JOHNSTONE, AND HAROLD S. OLCOTT. Comparative Biochemistry of Myoglobins 81

ALLERTON, SAMUEL E., DAVID ELWYN, JOHN T. EDSALL, AND PIERRE-FRANÇOIS SPAHR. Isolation and Amino Acid Composition of Dog Plasma Albumin 85

LOVENBERG, W., HERBERT WEISSBACH, AND SIDNEY UDENFRIEND. Aromatic L-Amino Acid Decarboxylase 89

FRISELL, WILHELM R., AND COSMO G. MACKENZIE. Separation and Purification of Sarcosine Dehydrogenase and Dimethylglycine Dehydrogenase 94

RICHERT, DAN A., RALF AMBERG, AND MARGARET WILSON. Metabolism of Glycine by Avian Liver 99

MAZELIS, MENDEL. The Pyridoxal Phosphate-dependent Oxidative Decarboxylation of Methionine by Peroxidase. I. Characteristics and Properties of the Reaction 104

MAZELIS, MENDEL, AND LLOYD L. INGRAHAM. The Pyridoxal Phosphate-dependent Oxidative Decarboxylation of Methionine by Peroxidase. II. Identification of 3-Methylthiopropionamide as a Product of the Reaction 109

AKEDO, HITOSHI, AND HALVOR N. CHRISTENSEN. Transfer of Amino Acids across the Intestine: a New Model Amino Acid 113

AKEDO, HITOSHI, AND HALVOR N. CHRISTENSEN. Nature of Insulin Action on Amino Acid Uptake by the Isolated Diaphragm 118

KLAIN, GEORGE, AND B. CONNOR JOHNSON. Metabolism of Labeled Aminoethanol, Glycine, and Arginine in the Chick 123

WADA, HIROSHI, AND ESMOND E. SNELL. Enzymatic Transamination of Pyridoxamine. I. With Oxaloacetate and α-Ketoglutarate 127

WADA, HIROSHI, AND ESMOND E. SNELL. Enzymatic Transamination of Pyridoxamine. II. Crystalline Pyridoxamine-Pyruvate Transaminase 133

OHNISHI, EIJI, HELEN MACLEOD, AND N. H. HOROWITZ. Mutants of Neurospora Deficient in D-Amino Acid Oxidase 138

NEMER, MARTIN. Characteristics of the Utilization of Nucleosides by Embryos of *Paracentrotus lividus* 143

FRITZSON, PER. The Relation between Uracil-catabolizing Enzymes and Rate of Rat Liver Regeneration 150

MORA, PETER T., BOBBY G. YOUNG, AND SAIYID RIZVI. Inactivation of Bacteriophage with Polyanions, and the Role of Amines in Activity 157

MENDICINO, JOSEPH. Phosphorylation of Cytidine Monophosphate in Animal Tissues 165

ABRAMS, ADOLPH, AND PETER MCNAMARA. Polynucleotide Phosphorylase in Isolated Bacterial Cell Membranes 170

COHN, MILDRED, AND THOMAS R. HUGHES, JR. Nuclear Magnetic Resonance Spectra of Adenosine Di- and Triphosphate. II. Effect of Complexing with Divalent Metal Ions 176

SINGER, MAXINE F., AND JUDITH K. GUSS. The Dependence of Reactions Catalyzed by Polynucleotide Phosphorylase on Oligonucleotides 182

PECK, H. D., JR., AND E. FISHER, JR. The Oxidation of Thiosulfate and Phosphorylation in Extracts of *Thiobacillus thioparus* 190

XUM

PECK, H. D., JR. The Role of Adenosine-5′-phosphosulfate in the Reduction of Sulfate to Sulfite by *Desulfovibrio desulfuricans* 198
BARONDES, SAMUEL H. The Influence of Neuroamines on the Oxidation of Glucose by the Anterior Pituitary. I. The Role of Monoamine Oxidase 204
KAKIMOTO, YASUO, AND MARVIN D. ARMSTRONG. The Phenolic Amines of Human Urine 208
FROMM, HERBERT J., AND DENNIS R. NELSON. Ribitol Dehydrogenase. III. Kinetic Studies with Product Inhibition 215
MARCUS, ABRAHAM, AND JOHN FEELEY. Inhibition of Catalase by Reducing Agents in the Presence of Phenazine Methosulfate 221
YAMAZAKI, I. The Reduction of Cytochrome *c* by Enzyme-generated Ascorbic Free Radical 224
WOLFF, J. The Effect of Thyroxine on Isolated Dehydrogenases. II. Sedimentation Changes in Glutamic Dehydrogenase 230
WOLFF, J. The Effect of Thyroxine on Isolated Dehydrogenases. III. The Site of Action of Thyroxine on Glutamic Dehydrogenase, the Function of Adenine and Guanine Nucleotides, and the Relation of Kinetic to Sedimentation Changes 236
ALEXANDER, NICHOLAS M., AND BETTY J. CORCORAN. The Reversible Dissociation of Thyroid Iodide Peroxidase into Apoenzyme and Prosthetic Group 243
SCOTT, EDWARD M., AND JAMES C. MCGRAW. Purification and Properties of Diphosphopyridine Nucleotide Diaphorase of Human Erythrocytes 249
ZABIN, IRVING, ADAM KEPES, AND JACQUES MONOD. Thiogalactoside Transacetylase 253
Preliminary Communications
RICKLI, EGON E., AND JOHN T. EDSALL. Zinc Binding and the Sulfhydryl Group of Human Carbonic Anhydrase PC258
RINGOLD, H. J., S. RAMACHANDRAN, AND ENRICO FORCHIELLI. Novel Enzymatic Reduction of Steroids *in Vitro:* Allyl Alcohol Formation PC260
DRABKIN, DAVID L., AND C. DAVID WISE. Creation of a Crystalline Interspecies Hybrid of Hemoglobin at pH Close to Neutrality PC261
PEEL, J. L. Vitamin B_{12} Derivatives and the CO_2-Pyruvate Exchange Reaction: A Reappraisal PC263
ABRAMSKY, TESSA, LEWIS P. ROWLAND, AND DAVID SHEMIN. The Formation of Isoleucine from β-Methylaspartic Acid in *Escherichia coli* W PC265
THOROGOOD, E. A Ferrihemoprotein from Lespedeza Nodules PC267
NISHIZUKA, YASUTOMI, ARATA ICHIYAMA, SHIGENOBU NAKAMURA, AND OSAMU HAYAISHI. A New Metabolic Pathway of Catechol PC268
KANFER, JULIAN, AND EUGENE P. KENNEDY. Synthesis of Phosphatidylserine by *Escherichia coli* PC270

FEBRUARY 1962

MARKOVITZ, ALVIN, AND ALBERT DORFMAN. Synthesis of Capsular Polysaccharide (Hyaluronic Acid) by Protoplast Membrane Preparations of Group A Streptococcus 273
PAREKH, AMRITLAL C., AND DAVID GLICK. Studies in Histochemistry. LXV. Heparin and Hexosamine in Isolated Mast Cells: Determination, Intracellular Distribution, and Effects of Biological State 280
PASTAN, IRA, BETTY HERRING, PHYLLIS JOHNSON, AND JAMES B. FIELD. Studies on the Mechanism by Which Epinephrine Stimulates Glucose Oxidation in the Thyroid 287
BARBAN, STANLEY. Studies on the Mechanism of Resistance to 2-Deoxy-D-glucose in Mammalian Cell Cultures 291
ANDERSON, R. L., AND W. A. WOOD. Pathway of L-Xylose and L-Lyxose Degradation in *Aerobacter aerogenes* 296
KOHN, PAUL, RICHARD J. WINZLER, AND RITA C. HOFFMANN. Metabolism of D-Glucosamine and *N*-Acetyl-D-glucosamine in the Intact Rat 304
PREISS, JACK, AND GILBERT ASHWELL. Alginic Acid Metabolism in Bacteria. I. Enzymatic Formation of Unsaturated Oligosaccharides and 4-Deoxy-L-*erythro*-5-hexoseulose Uronic Acid 309
PREISS, JACK, AND GILBERT ASHWELL. Alginic Acid Metabolism in Bacteria. II. The Enzymatic Reduction of 4-Deoxy-L-*erythro*-5-hexoseulose Uronic Acid to 2-Keto-3-deoxy-D-gluconic Acid 317
KANEDA, TOSHI, JOHN C. BUTTE, SHELDON B. TAUBMAN, AND JOHN W. CORCORAN. Actinomycete Antiobiotics. III. The Biogenesis of Erythronolide, the C_{21} Branched Chain Lactone in Erythromycin 322
GOTTFRIED, EUGENE L., AND MAURICE M. RAPPORT. The Biochemistry of Plasmalogens. I. Isolation and Characterization of Phosphatidal Choline, a Pure Native Plasmalogen 329
FISH, WILLIAM A., JOHN E. BOYD, AND WILLIAM M. STOKES. Metabolism of Cholesterol in the Chick Embryo. III. Localization and Turnover of Desmosterol (24-Dehydrocholesterol) 334
SULD, HELGA M., EZRA STAPLE, AND SAMUEL GURIN. Mechanism of Formation of Bile Acids from Cholesterol: Oxidation of 5β-Cholestane-3α,7α, 12α-triol and Formation of Propionic Acid from the Side Chain by Rat Liver Mitochondria 338
JARABAK, JOSEPH, JULIA A. ADAMS, H. G. WILLIAMS-ASHMAN, AND PAUL TALLALAY. Purification of a 17β-Hydroxysteroid Dehydrogenase of Human Placenta and Studies on Its Transhydrogenase Function 345
KANDUTSCH, A. A. Enzymatic Reduction of the Δ^7 Bond of 7-Dehydrocholesterol 358
STROHMAN, R. C., AND A. J. SAMORODIN. The Requirements for Adenosine Triphosphate Binding to Globular Actin 363
BRESLOW, ESTHER, AND FRANK R. N. GURD. Reactivity of Sperm Whale Metmyoglobin towards Hydrogen Ions and *p*-Nitrophenyl Acetate 371
SPIRO, ROBERT G. Studies on Fetuin, a Glycoprotein of Fetal Serum. II. Nature of the Carbohydrate Units 382
HILL, ROBERT L., AND WILLIAM R. SCHMIDT. The Complete Enzymic Hydrolysis of Proteins 389

YAGI, KOICHI, AND RYO MASE. Coupled Reaction of Creatine Kinase and Myosin A-Adenosine Triphosphatase ... 397
CARPENTER, FREDERICK H., AND ANDREAS CHRAMBACH. On the Amide Content of Insulin Fractions Isolated by Partition Column Chromatography and Countercurrent Distribution ... 404
CARPENTER, FREDERICK H., AND WILLIAM E. BAUM. Rates of Production of Alanine and Heptapeptide and of Loss of Biological Activity during Digestion of Insulin with Trypsin ... 409
KASSELL, BEATRICE, AND M. LASKOWSKI, SR. A Comparison of the Terminal Amino Acids of Chymotrypsinogen B and α-Chymotrypsinogen ... 413
SELA, MICHAEL. Inhibition of Ribonuclease by Copolymers of Glutamic Acid and Aromatic Amino Acids ... 418
KAKIMOTO, YASUO, AND MARVIN D. ARMSTRONG. On the Identification of Octopamine in Mammals ... 422
TOMIZAWA, HENRY H. Mode of Action of an Insulin-degrading Enzyme from Beef Liver ... 428
BARRETT, RICHARD J., HENRY FRIESEN, AND E. B. ASTWOOD. Characterization of Pituitary and Peptide Hormones by Electrophoresis in Starch Gel ... 432
FAHEY, JOHN L. Chromatographic Studies of Anomalous γ-, β_{2A}-, and Macroglobulins and Normal γ-Globulins in Myeloma and Macroglobulinemic Sera ... 440
NOLAN, CHRIS, AND EMIL L. SMITH. Glycopeptides. II. Isolation and Properties of Glycopeptides from Rabbit γ-Globulin ... 446
NOLAN, CHRIS, AND EMIL SMITH. Glycopeptides. III. Isolation and Properties of Glycopeptides from a Bovine Globulin of Colostrum and from Fraction II-3 of Human Globulin ... 453
SCHIMKE, ROBERT T. Adaptive Characteristics of Urea Cycle Enzymes in the Rat ... 459
LITWACK, GERALD, AND THOMAS I. DIAMONDSTONE. Nonspecific Stimulation of Tyrosine-α-ketoglutarate Transaminase Activity *in Vivo* ... 469
WALKER, MARGARET S., AND JAMES B. WALKER. Repression of Transamidinase Activity during Embryonic Development ... 473
RABINOVITZ, M., AND J. M. FISHER. A Dissociative Effect of Puromycin on the Pathway of Protein Synthesis by Ehrlich Ascites Tumor Cells ... 477
GILVARG, CHARLES. The Branching Point in Diaminopimelic Acid Synthesis ... 482
MILLER, RICHARD W., AND JOHN M. BUCHANAN. Biosynthesis of the Purines. XXVII. *N*-(5-Amino-1-ribosyl-4-imidazolylcarbonyl)-L-aspartic Acid 5′-Phosphate Kinosynthetase ... 485
MILLER, RICHARD W., AND JOHN M. BUCHANAN. Biosynthesis of the Purines. XXVIII. Mechanism of Action of Adenylsuccinase ... 491
GINSBURG, VICTOR, PAUL J. O'BRIEN, AND CLARA W. HALL. Guanosine Diphosphate D-*glycero*-D-*manno*-Heptose ... 497
ABDEL-LATIF, ATA A., AND SPYRIDON G. A. ALIVISATOS. Purification and Properties of Pyridine Nucleosidase (Glycosidase) from Bull Semen ... 500
SUNG, SHAN-CHING, AND M. LASKOWSKI, SR. A Nuclease from Mung Bean Sprouts ... 506
ZIMMERMAN, STEVEN B., S. R. KORNBERG, AND ARTHUR KORNBERG. Glucosylation of Deoxyribonucleic Acid. II. α-Glucosyl Transferases from T2- and T6-infected *Escherichia coli* ... 512
APOSHIAN, H. VASKEN, AND ARTHUR KORNBERG. Enzymatic Synthesis of Deoxyribonucleic Acid. IX. The Polymerase Formed after T2 Bacteriophage Infection of *Escherichia coli*: A New Enzyme ... 519
BRIDGERS, WILLIAM F., AND SEYMOUR KAUFMAN. The Enzymatic Conversion of Epinine to Epinephrine ... 526
HAMPTON, ALEXANDER. Studies of the Action of Adenylosuccinase with 6-Thio Analogues of Adenylosuccinic Acid ... 529
BROWN, GENE M. The Biosynthesis of Folic Acid. II. Inhibition by Sulfonamides ... 536
MCKENNIS, HERBERT, JR., LENNOX B. TURNBULL, SORELL L. SCHWARTZ, EINOSUKE TAMAKI, AND EDWARD R. BOWMAN. Demethylation in the Metabolism of (−)-Nicotine ... 541
WESTLEY, JOHN, AND TOKUMASA NAKAMOTO. Mechanism of Rhodanese Action: Isotopic Tracer Studies ... 547
YONETANI, TAKASHI. Studies on Cytochrome Oxidase. IV. The Cytochrome Oxidase Activity ... 550
DEITRICH, RICHARD A., LESLIE HELLERMAN, AND JOHN WEIN. Diphosphopyridine Nucleotide-linked Aldehyde Dehydrogenase. I. Specificity and *Sigma-Rho* Function ... 560
AURBACH, G. D., AND WILLIAM B. JAKOBY. The Multiple Functions of Thiooxidase ... 565
MINAKAMI, SHIGEKI, ROBERT L. RINGLER, AND THOMAS P. SINGER. Studies on the Respiratory Chain-linked Dihydrodiphosphopyridine Nucleotide Dehydrogenase. I. Assay of the Enzyme in Particulate and in Soluble Preparations ... 569
TURNER, JOHN F. CLANTON C. BLACK, AND MARTIN GIBBS. Studies on Photosynthetic Processes. I. The Effect of Light Intensity on Triphosphopyridine Nucleotide Reduction, Adenosine Triphosphate Formation, and Carbon Dioxide Assimilation in Spinach Chloroplasts ... 577
BLACK, CLANTON C., JOHN F. TURNER, MARTIN GIBBS, D. W. KROGMANN, AND SOLON A. GORDON. Studies on Photosynthetic Processes. II. Action Spectra and Quantum Requirement for Triphosphopyridine Nucleotide Reduction and the Formation of Adenosine Triphosphate by Spinach Chloroplasts ... 580
FRIDOVICH, IRWIN. Competitive Inhibition by Myoglobin of the Reduction of Cytochrome *c* by Xanthine Oxidase ... 584
WILLIAMS, CHARLES H., JR., AND HENRY KAMIN. Microsomal Triphosphopyridine Nucleotide-Cytochrome *c* Reductase of Liver ... 587
STERN, BABETTE K., AND BIRGIT VENNESLAND. The Effect of Carbon Dioxide on the Hill Reaction ... 596
SHUSTER, C. W., AND MICHAEL DOUDOROFF. A Cold-sensitive D(−)β-Hydroxybutyric Acid Dehydrogenase from *Rhodospirillum rubrum* ... 603
YOUNATHAN, EZZATS. Inhibition of the Citric Acid Cycle by Alloxan ... 608
ARCHIBALD, REGINALD M. Reactions of Creatinine with Alkaline Picrate ... 612

Preliminary Communication

BARRON, E. J., AND P. K. STUMPF. Evidence for Separate Pathways for the Biosynthesis of Saturated and Unsaturated Fatty Acids by an Avocado Enzyme System PC613

MARCH 1962

COHN, DAVID V., AND BERNARD K. FORSCHER. Aerobic Metabolism of Glucose by Bone 615

HASEGAWA, SHIN, AND CHARLES W. NAGEL. The Characterization of an α,β-Unsaturated Digalacturonic Acid 619

EYLAR, EDWIN H., AND ROGER W. JEANLOZ. Oligosaccharides from the α_1 Acid Glycoprotein of Human Plasma 622

MANSOUR, TAG E., AND JOAN M. MANSOUR. Effects of Serotonin (5-Hydroxytryptamine) and Adenosine 3′,5′-Phosphate on Phosphofructokinase from the Liver Fluke, *Fasciola hepatica* 629

JACOBSON, BERNARD, AND EUGENE A. DAVIDSON. Biosynthesis of Uronic Acids by Skin Enzymes. I. Uridine Diphosphate-D-glucose Dehydrogenase of Rabbit Skin 635

JACOBSON, BERNARD, AND EUGENE A. DAVIDSON. Biosynthesis of Uronic Acids by Skin Enzymes. II. Uridine Diphosphate-D-glucuronic Acid-5-epimerase ... 638

PONTREMOLI, S., AND G. MANGIAROTTI. A Simple Method for the Preparation of D-Ribulose 5-Phosphate 643

SPIRO, ROBERT G. Studies on the Monosaccharide Sequence of the Serum Glycoprotein Fetuin 646

PIERINGER, RONALD A., AND LOWELL E. HOKIN. Biosynthesis of Lysophosphatidic Acid from Monoglyceride and Adenosine Triphosphate 653

PIERINGER, RONALD A., AND LOWELL E. HOKIN. Biosynthesis of Phosphatidic Acid from Lysophosphatidic Acid and Palmityl Coenzyme A 659

LENNARZ, W. J., GÜNTER SCHEUERBRANDT, AND KONRAD BLOCH. The Biosynthesis of Oleic and 10-Methylstearic Acids in *Mycobacterium phlei* 664

MCCAMAN, RICHARD E. Intermediary Metabolism of Phospholipids in Brain Tissue. Microdetermination of Choline Phosphokinase 672

FUTTERMAN, SIDNEY. Enzymatic Oxidation of Vitamin A Aldehyde to Vitamin A Acid 677

YOKOYAMA, H., T. O. M. NAKAYAMA, AND C. O. CHICHESTER. Biosynthesis of β-Carotene by Cell-free Extracts of *Phycomyces blakesleeanus* 681

WAKIL, SALIH J., AND RUBIN BRESSLER. Studies on the Mechanism of Fatty Acid Synthesis. X. Reduced Triphosphopyridine Nucleotide-Acetoacetyl Coenzyme A Reductase 687

LONGMORE, WILLIAM J., AND DWIGHT J. MULFORD. The Effect of 2-Amino-2-methylpropanol on Rat Liver Phospholipid Metabolism 694

SHIMIZU, KYUTARO, MARCEL GUT, AND RALPH I. DORFMAN. 20α,22ξ-Dihydroxycholesterol, an Intermediate in the Biosynthesis of Pregnenolone (3β-Hydroxypregn-5-en-20-one) from Cholesterol 699

CHAUDHURI, AMALA C., YOSHIMICHI HARADA, KYUTARO SHIMIZU, MARCEL GUT, AND RALPH I. DORFMAN. Biosynthesis of Pregnenolone from 22-Hydroxycholesterol 703

REDDY, WILLIAM J., AND D. MARK HEGSTED. The Measurement and Distribution of Carnosine in the Rat 705

CANN, JOHN R. Electrophoretic Demonstration of Specific Enzyme-Substrate Complex between Pepsin and Serum Albumin. II. Inhibition of Complex Formation by Acetyl-L-tryptophan and Fatty Acids 707

STARK, GEORGE R., AND CHARLES R. DAWSON. On the Accessibility of Sulfhydryl Groups in Ascorbic Acid Oxidase 712

PUTNAM, FRANK W., MARGARET TAN, LYDIA T. LYNN, CAROLINE W. EASLEY, AND SHUNSUKE MIGITA. The Cleavage of Rabbit γ-Globulin by Papain 717

KAY, CYRIL M., AND HENRY F. PABST. Physicochemical Properties of γ-Myosin from Dystrophic Muscle 727

RESSLER, CHARLOTTE. Isolation and Identification from Common Vetch of the Neurotoxin β-Cyano-L-alanine, a Possible Factor in Neurolathyrism 733

MAYER, MARY E., AND ANTIONETTE E. GRECO. The Chromatographic Separation and Characterization of the Acid and Alkaline Ribonucleases of Bovine Spleen and Liver 736

NYGAARD, AGNAR P. D- and L-Lactic Cytochrome *c* Reductases of Yeast: Interaction of Polyvalent Electrolytes at the Acceptor Sites 742

BELMAN, SIDNEY, AND WALTER TROLL. The Interaction of 2-Amino-1-naphthol with Bovine Serum Albumin and Cytochrome *c* in Relation to Its Effect on Rat Bladder 746

CEBRA, JOHN J., DAVID GIVOL, AND EPHRAIM KATCHALSKI. Soluble Complexes of Antigen and Antibody Fragments 751

ALLEN, ESTHER H., AND RICHARD S. SCHWEET. Synthesis of Hemoglobin in a Cell-free System. I. Properties of the Complete System 760

FLAVIN, MARTIN. Microbial Transsulfuration: the Mechanism of an Enzymatic Disulfide Elimination Reaction 768

NEUHAUS, FRANCIS C. The Enzymatic Synthesis of D-Alanyl-D-alanine. I. Purification and Properties of D-Alanyl-D-alanine Synthetase 778

PETERKOFSKY, ALAN. The Mechanism of Action of Histidase: Amino-enzyme Formation and Partial Reactions 787

APGAR, JEAN, ROBERT W. HOLLEY, AND SUSAN H. MERRILL. Purification of the Alanine-, Valine-, Histidine-, and Tyrosine-acceptor Ribonucleic Acids from Yeast. 796

GUROFF, GORDON, AND SIDNEY UDENFRIEND. Studies on Aromatic Amino Acid Uptake by Rat Brain *in Vivo*. Uptake of Phenylalanine and of Tryptophan; Inhibition and Stereoselectivity in the Uptake of Tyrosine by Brain and Muscle 803

TOMISEK, ARTHUR J., AND MARY R. REID. Chromatographic Studies of Purine Metabolism. V. Inhibition Mechanism of Diazo-oxo-norleucine in Wild-type and in Diazo-oxo-norleucine-resistant *Escherichia coli* 807

BLAKLEY, R. L., AND BARBARA M. MCDOUGALL. The Biosynthesis of Thymidylic Acid. III. Purification of Thymidylate Synthetase and Its Spectrophotometric Assay 812

LEHMAN, I. R., G. G. ROUSSOS, AND E. A. PRATT. The Deoxyribonucleases of *Escherichia coli*. II. Purification and Properties of a Ribonucleic Acid-inhibitable Endonuclease 819

LEHMAN, I. R., G. G. ROUSSOS, AND E. A. PRATT. The Deoxyribonucleases of *Escherichia coli*. III. Studies on the Nature of the Inhibition of Endonuclease by Ribonucleic Acid 829

RUSHIZKY, GEORGE W., AND HERBERT A. SOBER. Characterization of the Major Compounds in Ribonuclease T_1 Digests of Ribonucleic Acid. I. Mono-, Di-, and Trinucleotides 834

HEPPEL, LEON A., D. R. HARKNESS, AND R. J. HILMOE. A Study of the Substrate Specificity and Other Properties of the Alkaline Phosphatase of *Escherichia coli* 841

WEIBULL, CLAES, JOHN W. GREENAWALT, AND HANS LÖW. The Hydrolysis of Adenosine Triphosphate by Cell Fractions of *Bacillus megaterium*. I. Localization and General Characteristics of the Enzymic Activities 847

GREENAWALT, JOHN W., CLAES WEIBULL, AND HANS LÖW. The Hydrolysis of Adenosine Triphosphate by Cell Fractions of *Bacillus megaterium*. II. Stimulation and Inhibition of the Enzymic Activities 853

BENTLEY, RONALD, D. S. BHATE, AND JOHN G. KEIL. Tetronic Acid Biosynthesis in Molds. I. Formation of Carlosic and Carolic Acids in *Penicillium charlesii* 859

BENTLEY, RONALD, AND JOHN G. KEIL. Tetronic Acid Biosynthesis in Molds. II. Formation of Penicillic Acid in *Penicillium cyclopium* 867

WOLFF, JOHN B. Ergothionase from *Escherichia coli* 874

KATZ, EDWARD, AND HERBERT WEISSBACH. Biosynthesis of the Actinomycin Chromophore; Enzymatic Conversion of 4-Methyl-3-hydroxyanthranilic Acid to Actinocin 882

WU, PEI-HSING LIN, THOMAS GRIFFITH, AND RICHARD U. BYERRUM. Synthesis of Pyrrolidine Ring of Nicotine from Several C^{14}-labeled Metabolites by *Nicotiana rustica* 887

GERHART, JOHN C., AND ARTHUR B. PARDEE. The Enzymology of Control by Feedback Inhibition 891

BRONK, J. RAMSEY, AND M. SYLVIA BRONK. The Influence of Thyroxine on Oxidative Phosphorylation in Mitochondria from Thyroidectomized Rats 897

FALCONE, A. B., ROSE L. MAO, AND EARL SHRAGO. A Study of the Action of Hypoglycemia-producing Biguanide and Sulfonylurea Compounds on Oxidative Phosphorylation 904

WILLIS, J. E., AND H. J. SALLACH. Evidence for a Mammalian D-Glyceric Dehydrogenase 910

FRIDOVICH, IRWIN, AND PHILIP HANDLER. Xanthine Oxidase. V. Differential Inhibition of the Reduction of Various Electron Acceptors 916

RAJAGOPALAN, K. V., IRWIN FRIDOVICH, AND PHILIP HANDLER. Hepatic Aldehyde Oxidase. I. Purification and Properties 922

JOSHI, JAYANT G., AND PHILIP HANDLER. Purification and Properties of Nicotinamidase from *Torula cremoris* 929

KULKA, RICHARD G., AND CECIL COOPER. The Action of Oligomycin on the Inorganic Orthophosphate-Adenosine Triphosphate and Adenosine Diphosphate-Adenosine Triphosphate Exchange Reactions of Digitonin Particles 936

EICHEL, HERBERT J., AND LEONA T. REM. Respiratory Enzyme Studies in *Tetrahymena pyriformis*. V. Some Properties of an L-Lactic Oxidase 940

LEHNINGER, ALBERT L. A Heat-labile Factor Required in Extrusion of Water from Mitochondria 946

NEUBERT, DIETHER, AND ALBERT L. LEHNINGER. The Effect of Thiols and Disulfides on Water Uptake and Extrusion by Rat Liver Mitochondria 952

MCCORMICK, DONALD B. The Intracellular Localization, Partial Purification, and Properties of Flavokinase from Rat Liver 959

SEMPLE, S. J. G., G. MATTOCK, AND R. UNCLES. A Buffer Standard for Blood pH Measurements 963

MILLER, ZELMA, INNA PONCET, AND EVA TAKACS. Biochemical Studies on Experimental Congenital Malformations: Flavin Nucleotides and Folic Acid in Fetuses and Livers from Normal and Riboflavin-deficient Rats 968

Preliminary Communications

ENGSTROM, G. W., AND H. F. DELUCA. The Action of Vitamin D *in Vivo* and *in Vitro* on the Release of Calcium from Kidney Mitochondria PC974

FUKUSHIMA, DAVID K., AND H. LEON BRADLOW. A New Metabolite of Testosterone PC975

NEIMS, ALLEN H., AND LESLIE HELLERMAN. Specificity of the D-Amino Acid Oxidase in Relation to Glycine Oxidase Activity PC976

APRIL 1962

EDITORIAL COMMENT. Report of the Commission on Enzymes of the International Union of Biochemistry, 1961 979

GLICK, MARY CATHERINE, I-WEN CHEN, AND FRIEDRICH ZILLIKEN. Formation *in Vitro* of 3-*O*-β-D-Galactopyranosyl-*N*-acetyl-D-glucosamine, Free and Phosphorylated 981

LEBOEUF, BERNARD, ALBERT E. RENOLD, AND GEORGE F. CAHILL, JR. Studies on Rat Adipose Tissue *in Vitro*. IX. Further Effects of Cortisol on Glucose Metabolism 988

REISS, OSCAR K., LESLIE HELLERMAN, JOHN A. AMBROSE, CHARLES I. SMITH, M. K. GEY, AND ANNE E. IBER. Pyruvate Metabolism. III. Formation of Citrate in Ascitic Nodules from a Strain of Walker Rat Mammary Carcinoma 256 992

HELLERMAN, LESLIE, OSCAR K. REISS, AND M. L. GEY. Pyruvate Metabolism. IV. Utilization of Pyruvate

in the Isolated Mitochondria of an Ascitic Form of Walker Rat Mammary Carcinoma 256 997
PAZUR, JOHN H., AND KJELL KLEPPE. The Hydrolysis of α-D-Glucosides by Amyloglucosides from *Aspergillus niger* 1002
ALGRANATI, ISRAEL D., AND ENRICO CABIB. Uridine Diphosphate D-Glucose-glycogen Glucosyltransferase from Yeast 1007
CHAKRAVORTY, M., L. A. VEIGA, METRY BACILA, AND B. L. HORECKER. Pentose Metabolism in Candida. II. The Diphosphopyridine Nucleotide-specific Polyol Dehydrogenase of *Candida utilis* 1014
EYLAR, EDWIN H., AND ROGER W. JEANLOZ. Periodate Oxidation of the α_1 Acid Glycoprotein of Human Plasma 1021
KOEPPE, ROGER E., AND CHAE HEE HAHN. Concerning Pyruvate Metabolism in Rat Brain 1026
ANDERSON, R. L., AND W. A. WOOD. Purification and Properties of L-Xylulokinase 1029
HANSEN, R. G., HARLAND G. WOOD, GEORGES J. PEETERS, BIRGIT JACOBSON, AND JOANNE WILKEN. Lactose Synthesis. VI. Labeling of Lactose Precursors by Glycerol-1,3-C^{14} and Glucose-2-C^{14} 1034
ROSENBERG, EUGENE, AND STEPHEN ZAMENHOF. A New Naturally Occurring Disaccharide, β-D-Ribofuranosyl β-D-Ribofuranoside 1040
NICHOLLS, DORIS, JULIAN KANFER, AND ELWOOD TITUS. The Effect of Ouabain on the Incorporation of Inorganic P^{32} into Phospholipid 1043
WEBSTER, LESLIE T., JR., AND FRANCESCO CAMPAGNARI. The Biosynthesis of Acetyl and Butyryl Adenylates .. 1050
RAPPORT, MAURICE M., HERBERT SCHNEIDER, AND LISELOTTE GRAF. Immunochemical Studies of Organ and Tumor Lipids. XI. A Simplified Preparation of Cytolipin H 1056
HUANG, WEI Y., AND WILLIAM H. PEARLMAN. The Corpus Luteum and Steroid Hormone Formation. I. Studies on Luteinized Rat Ovarian Tissue *in Vitro* .. 1060
RONGONE, EDWARD L., AND ALBERT SEGALOFF. Isolation of Urinary Metabolites of 17 α-Methyltestosterone 1066
TUCKER, DONALD, AND SANTIAGO GRISOLIA. Inactivation of Muscle Triosephosphate Dehydrogenase by Reduced Diphosphopyridine Nucleotide at Physiological Concentrations 1068
TONOMURA, YUJI, SEIICHI TOKURA, AND KAZUKO SEKIYA. Binding of Myosin A to F-Actin 1074
GREENBAUM, LOWELL M., AND RAYMOND SHERMAN. Studies on Catheptic Carboxypeptidase 1082
EBATA, MITSUO, AND KERRY T. YASUNOBU. Chymopapain. I. Isolation, Crystallization, and Preliminary Characterization 1086
MARUYAMA, K., AND J. GERGELY. Interaction of Actomysin with Adenosine Triphosphate at Low Ionic Strength. I. Dissociation of Actomysin during the Clear Phase 1095
MARUYAMA, K., AND J. GERGELY. Interaction of Actinomysin with Adenosine Triphosphate at Low Ionic Strength. II. Factors Influencing Clearing and Superprecipitation: Adenosine Triphosphatase and Birefringence of Flow Studies 1100
SOPHIANOPOULOS, A. J., C. K. RHODES, D. N. HOLCOMB, AND K. E. VAN HOLDE. Physical Studies of Lysozyme. I. Characterization 1107
DEMPSEY, WALTER, B., AND HALVOR N. CHRISTENSEN. The Specific Binding of Pyridoxal 5′-Phosphate to Bovine Plasma Albumin 1113
SMITH, JACK L., AND R. C. KRUEGER. Separation and Purification of the Phenolases of the Common Mushroom 1121
LINDSKOG, SVEN, AND BO G. MALSTRÖM. Metal Binding and Catalytic Activity in Bovine Carbonic Anhydrase 1129
MAHOWALD, THEODORE A., ERNST A. NOLTMANN, AND STEPHEN A. KUBY. Studies on Adenosine Triphosphate Transphosphorylases. I. Amino Acid Composition of Adenosine Triphosphate-Adenosine 5′-Phosphate Transphosphorylase (Myokinase) 1138
NOLTMANN, ERNST A., THEODORE A. MAHOWALD, AND STEPHEN A. KUBY. Studies on Adenosine Triphosphate Transphosphorylases. II. Amino Acid Composition of Adenosine Triphosphate-Creatine Transphosphorylase 1146
HAMILTON, MARY G., LIEBE F. CAVALIERI, AND MARY L. PETERMANN. Some Physiochemical Properties of Ribonucleoprotein from Rat Liver Microsomes 1155
WELTY, J. D., W. O. READ, AND E. H. SHAW, JR. Isolation of 2-Hydroxyethanesulfonic Acid (Isethionic Acid) from Dog Heart 1160
BROWN, RAY K. Studies on the Antigenic Structure of Ribonuclease. III. Inhibition by Peptides of Antibody to Performic Acid-oxidized Ribonuclease 1162
TANFORD, CHARLES, C. E. BUCKLEY, III, PARITOSH K. DE, AND EDMUND P. LIVELY. Effect of Ethylene Glycol on the Conformation of α-Globulin and β-Lactoglobulin 1168
ZANNONI, VINCENT G. The Tyrosine Oxidation System of Liver. V. The Ability of Various Quinones to Reactivate Inhibited *p*-Hydroxyphenylpyruvate Acid Oxidase 1172
SMITH, THOMAS E., AND CHOZO MITOMA. Partial Purification and Some Properties of 4-Ketoproline Reductase 1177
PETERS, THEODORE, JR. The Biosynthesis of Rat Serum Albumin. I. Properties of Rat Albumin and Its Occurrence in Liver Cell Fractions 1181
PETERS, THEODORE, JR. The Biosynthesis of Rat Serum Albumin. II. Intracellular Phenomena in the Secretion of Newly Formed Albumin 1186
NEMETH, ANDREW M., AND G. DE LA HABA. The Effect of Puromycin on the Developmental and Adaptive Formation of Tryptophan Pyrrolase 1190
TSUNG, C. M., W. GRADY SMITH, FRANKLIN R. LEACH, AND L. M. HENDERSON. Hydroxylysine Metabolism in *Streptococcus faecalis* 1194
SMITH, W. GRADY, MARY NEWMAN, FRANKLIN R. LEACH, AND L. M. HENDERSON. The Effect of Hydroxylysine on Cell Wall Synthesis and Cell Stability in *Streptococcus faecalis* 1198
CHRISTENSEN, HALVOR N., AND JUDITH C. JONES. Amino Acid Transport Models: Renal Resorption and Resistance to Metabolic Attack 1203

McManus, I. Rosabelle. Enzymatic Synthesis of Anserine in Skeletal Muscle by *N*-Methylation of Carnosine 1207
Alivisatos, Spyridon G. A., L. LaMantia, F. Ungar, and B. L. Matijevitch. Imidazolytic Processes. VII. Biosynthesis of the Pyrophosphate of 5′-Inosinic and 5′-Adenylic Acids 1212
Sutherland, Earl W., T. W. Rall, and Tara Menon. Adenyl Cyclase. I. Distribution, Preparation, and Properties 1220
Rall, T. W., and Earl W. Sutherland. Adenyl Cyclase. II. The Enzymatically Catalyzed Formation of Adenosine 3′,5′-Phosphate and Inorganic Pyrophosphate from Adenosine Triphosphate 1228
Murad, F., Y.-M. Chi, T. W. Rall, and Earl W. Sutherland. Adenyl Cyclase. III. The Effect of Catecholamines and Choline Esters on the Formation of Adenosine 3′,5′-Phosphate by Preparations from Cardiac Muscle and Liver 1233
Klainer, L. M., Y.-M. Chi, S. L. Freidberg, T. W. Rall, and Earl W. Sutherland. Adenyl Cyclase. IV. The Effects of Neurohormones on the Formation of Adenosine 3′,5′-Phosphate by Preparations from Brain and Other Tissues 1239
Butcher, R. W., and Earl W. Sutherland. Adenosine 3′,5′-Phosphate in Biological Materials. I. Purification and Properties of Cyclic 3′,5′-Nucleotide Phosphodiesterase and Use of This Enzyme to Characterize Adenosine 3′,5′-Phosphate in Human Urine. 1244
Pizer, Lewis I., and Seymour S. Cohen. Virus-induced Acquisition of Metabolic Function. V. Purification and Properties of the Deoxycytidylate Hydroxymethylase and Studies on Its Origin 1251
Carlson, Don M., and R. G. Hansen. The Isolation and Synthesis of Guanosine Diphosphate Glucose 1260
Kuno, Sigeru, and I. R. Lehman. Gentiobiose, a Constituent of Deoxyribonucleic Acid from Coliphage T6. 1266
Tono, Henrique, and Seymour S. Cohen. The Activity of Nucleoside Phosphorylase on 1-β-D-Arabinosyluracil within *Escherichia coli* 1271
Minard, Frederick N., and Raymond V. Davis. The Effects of Electroshock on the Acid-soluble Phosphates of Rat Brain 1283
Whiteley, H. R., and F. M. Huennekens. Mechanism of the Reaction Catalyzed by the Formate-activating Enzyme from *Micrococcus aerogenes* 1290
Donaldson, Kenneth O., and John C. Keresztesy. Naturally Occurring Forms of Folic Acid. II. Enzymatic Conversion of Methylenetetrahydrofolic Acid to Prefolic A-Methyltetrahydrofolate 1298
Imsande, John, and Arthur B. Pardee. Regulation of Pyridine Nucleotide Biosynthesis in *Escherichia coli* .. 1305
Baker, J. R., and Sterling Chaykin. The Biosynthesis of Trimethylamine-*N*-Oxide 1309
Bertino, Joseph R., Barbara Simmons, and Dennis M. Donohue. Purification and Properties of the Formate-activating Enzyme from Erythrocytes 1314
Miles, J. L., E. Morey, F. Crain, S. Gross, J. San Julian, and W. J. Canady. Inhibition of α-Chymotrypsin by Diethyl Ether and Certain Alcohols: a New Type of Competitive Inhibition 1319
Wilson, Irwin B., and J. Alexander. Acetylcholinesterase: Reversible Inhibitors, Substrate Inhibition. 1323
Packer, Lester. Metabolic and Structural States of Mitochondria. III. Reversal of Electron Transport and Mitochondrial Swelling 1327
White, David C., and Lucile Smith. Hematin Enzymes of *Hemophilus parainfluenzae* 1332
Smith, Lucile, and David C. White. Structure of the Respiratory Chain System as Indicated by Studies with *Hemophilus parainfluenzae* 1337
Liss, Maurice, Susan B. Horwitz, and Nathan O. Kaplan. D-Mannitol 1-Phosphate Dehydrogenase and D-Sorbitol 6-Phosphate Dehydrogenase in *Aerobacter aerogenes* 1342
Repaske, Roy. The Electron Transport System of *Hydrogenomonas eutropha*. I. Diphosphopyridine Nucleotide Reduction by Hydrogen 1351
Pihl, Alexander, and Rolf Lange. The Interaction of Oxidized Glutathione, Cystamine Monosulfide, and Tetrathionate with the —SH Groups of Rabbit Muscle D-Glyceraldehyde 3-Phosphate Dehydrogenase 1356
Wise, James B., and Albert L. Lehninger. The Stability of Mitochondrial D-β-Hydroxybutyric Dehydrogenase and Its Relationship to the Respiratory Chain 1363
Preliminary Communications
Carlin, Harold, and Oscar Hechter. The Disulfide-Sulfhydryl Interchange as a Mechanism of Insulin Action PC1371
Mudd, S. Harvey. Activation of Methionine for Transmethylation. V. The Mechanism of Action of the Methionine-activating Enzyme PC1372
Omura, Tsuneo, and Ryo Sato. A New Cytochrome in Liver Microsomes PC1375
Cohen, Seymour S., and Hazel D. Barner. Spermidine in the Extraction of the Deoxyribosyl-synthesizing System from T6r⁺-infected *Escherichia coli* PC1376
Robbins, Phillips W., and James B. Hammond. Evidence for the Formation of Pseudouridine by the Rearrangement of a Uridine Derivative PC1379

May 1962

International Union of Pure Applied Chemistry. Tentative Rules: Abbreviations and Symbols for Chemical Names of Special Interest in Biological Chemistry 1381
Strominger, Jack L. Uridine and Guanosine Nucleotides of Hen Oviduct 1388
Suzuki, Sakaru. A Novel Uridine Nucleotide Containing *N*-Acetylglucosamine and Galactose 1393

GABRIEL, OTHMAR, AND GILBERT ASHWELL. Isolation of Uridine Diphosphate *N*-Acetylglucosamine-6-phospho-1-galactose from Hen Oviduct 1400
SCHNEIDER, WALTER C. Further Studies on the Assay of Deoxyribosyl Compounds in Tissue Extracts 1405
MCFADDEN, BRUCE A., AND WILLIAM V. HOWES. Isocitrate Lyase and Malate Synthase in *Hydrogenomonas facilis* 1410
DANISHEFSKY, I., HAROLD B. EIBER, AND ESTHER LANGHOLTZ. Investigations on the Chemistry of Heparin. III. Reduction and Hydrolyis 1413
KRASNA, ALVIN I. The Stereochemical Configuration of DL-β-Fluoromalic Acid 1418
WARREN, LEONARD, AND HERBERT FELSENFELD. The Biosynthesis of Sialic Acids 1421
WATKINS, WINIFRED M., AND W. Z. HASSID. The Synthesis of Lactose by Particulate Enzyme Preparations from Guinea Pig and Bovine Mammary Glands 1432
BRESSLER, RUBIN, AND SALIH J. WAKIL. Studies on the Mechanism of Fatty Acid Synthesis. XI. The Product of the Reaction and the Role of Sulfhydryl Groups in the Synthesis of Fatty Acids 1441
BAER, ERICH, AND FRITZ ECKSTEIN. Phosphatidylthreonines. I. Synthesis of Distearoyl-L-α-glycerylphosphoryl-L-threonine 1449
SENIOR, JOHN R., AND KURT J. ISSELBACHER. Direct Esterification of Monoglycerides with Palmityl Coenzyme A by Intestinal Epithelial Subcellular Fractions 1454
KAZIRO, YOSHITO, L. F. HASS, P. D. BOYER, AND SEVERO OCHOA. Mechanism of the Propionyl Carboxylase Reaction. II. Isotopic Exchange and Tracer Experiments 1460
JACOBSOHN, GERT M., AND SEYMOUR LIEBERMAN. Studies on the Chemical Cleavage of the Urinary Glucuronosides of the 17-Ketosteroids 1469
NICHOLAS, HAROLD J. Biosynthesis of β-Sitosterol and Pentacyclic Triterpenes of *Salvia officinalis* 1476
NICHOLAS, HAROLD J. Biosynthesis of Sclaroel, β-Sitosterol, and Oleanolic Acid from Mevalonic Acid-2-C^{14} .. 1481
NICHOLAS, HAROLD J. Biosynthesis of β-Sitosterol and Certain Terpenoid Substances in *Ocimum basilicum* from Mevalonic Acid-2-C^{14} 1485
FISHMAN, JACK, J. B. BROWN, LEON HELLMAN, BARNETT ZUMOFF, AND T. F. GALLAGHER. Estrogen Metabolism in Normal and Pregnant Women 1489
SHARMA, D. C., ENRICO FORCHIELLI, AND RALPH I. DORFMAN. Preparation and Properties of a Soluble Steroid 11β-Hydroxylase from Bovine Adrenal Cortex ... 1495
KAWAHARA, FRANK S., SHU-FANG WANG, AND PAUL TALALAY. The Preparation and Properties of Crystalline Δ^5-3-Ketosteroid Isomerase 1500
SPIRO, MARY JANE, AND ROBERT G. SPIRO. Composition of the Peptide Portion of Fetuin 1507
YAMADA, HIDEAKI, AND KERRY T. YASUNOBU. Monoamine Oxidase. I. Purification, Crystallization, and Properties of Plasma Monoamine Oxidase 1511
SWENSON, ROBERT T., ROBERT L. HILL, HERMANN LEHMANN, AND ROBERT T. S. JIM. A Chemical Abnormality in Hemoglobin G from Chinese Individuals .. 1517
READ, W. O., AND J. D. WELTY. Synthesis of Taurine and Isethionic Acid by Dog Heart Slices 1521
HENNING, U., DONALD R. HELINSKI, F. C. CHAO, AND CHARLES YANOFSKY. The A Protein of the Tryptophan Synthetase of *Escherichia coli*. Purification, Crystallization, and Composition Studies 1523
CARLTON, BRUCE C., AND CHARLES YANOFSKY. The Amino-terminal Sequence of the A Protein of Tryptophan Synthetase of *Escherichia coli* 1531
MAHOWALD, THEODORE A., ERNST A. NOLTMANN, AND STEPHEN A. KUBY. Studies on Adenosine Triphosphate Transphosphorylases. III. Inhibition Reactions 1535
HILL, ROBERT J., WILLIAM KONIGSBERG, GUIDO GUIDOTTI, AND LYMAN C. CRAIG. The Structure of Human Hemoglobin. I. The Separation of the α and β Chains and Their Amino Acid Composition 1549
COHEN, STANELY. Isolation of a Mouse Submaxillary Gland Protein Accelerating Incisor Eruption and Eyelid Opening in the New-born Animal 1555
HOPE, DEREK B., V. V. S. MURTI, AND VINCENT DU VIGNEAUD. A Highly Potent Analogue of Oxytocin, Desamino-oxytocin 1563
NELSON, CHARLES A., AND J. P. HUMMEL. Reversible Denaturation of Pancreatic Ribonuclease by Urea .. 1567
NELSON, CHARLES A., J. P. HUMMEL, C. A. SWENSON, AND L. FRIEDMAN. Stabilization of Pancreatic Ribonuclease against Urea Denaturation by Anion Binding 1575
PROCKOP, DARWIN J., BEVERLY PETERKOFSKY, AND SIDNEY UDENFRIEND. Studies on the Intracellular Localization of Collagen Synthesis in the Intact Chick Embryo 1581
KATZ, EDWARD, DARWIN J. PROCKOP, AND SIDNEY UDENFRIEND. Precursors of the Hydroxyproline and Ketoproline in Actinomycin 1585
MIZE, CHARLES E., AND ROBERT G. LANGDON. Hepatic Glutathione Reductase. I. Purification and General Kinetic Properties 1589
MIZE, CHARLES E., THOMAS E. THOMPSON, AND ROBERT G. LANGDON. Hepatic Glutathione Reductase. II. Physical Properties and Mechanism of Action 1596
COMB, DONALD G. The Enzymatic Addition of D-Alanyl-D-alanine to a Uridine Nucleotide-peptide 1601
KENNEY, FRANCIS T. Induction of Tyrosine-α-ketoglutarate Transaminase in Rat Liver. II. Enzyme Purification and Preparation of Antitransaminase .. 1605
KENNEY, FRANCIS T. Induction of Tyrosine-α-ketoglutarate Transaminase in Rat Liver. III. Immunochemical Analysis 1610
ASKARI, AMIR, AND DONALD B. MELVILLE. The Reaction Sequence in Ergothioneine Biosynthesis: Hercynine as an Intermediate 1615
MAZUR, ROBERT H., BERNICE W. ELLIS, AND PETER S. CAMMARATA. A New Reagent for Detection of Peptides, Nucleotides, and Other N—H-containing Compounds on Paper Chromatograms 1619
LOWY, BERTRAM A., MARJORIE K. WILLIAMS, AND IRVING M. LONDON. Enzymatic Deficiencies of Purine Nucleotide Synthesis in the Human Erythrocyte 1622

DOLIN, M. I. Polynucleotide Phosphorylase of *Clostridium perfringens*. I. Effect of Basic Polypeptides on Polyribonucleotide Synthesis 1626
LIEBERMAN, IRVING, AND PETER OVE. Deoxyribonucleic Acid Synthesis and Its Inhibition in Mammalian Cells Cultured from the Animal 1634
WILSON, D. WRIGHT, AND HELENE C. WILSON. Studies *in Vitro* of the Digestion and Absorption of Purine Ribonucleotides by the Intestine 1643
PECK, H. D., JR., AND M. P. STULBERG. O^{18} Studies on the Mechanism of Sulfate Formation and Phosphorylation in Extracts of *Thiobacillus thioparus* 1648
KOSUGE, T., AND ERIC E. CONN. The Metabolism of Aromatic Compounds in Higher Plants. V. Purification and Properties of Dihydrocoumarin Hydrolase of *Melilotus alba* 1653
AXELROD, JULIUS. Purification and Properties of Phenylethanolamine-*N*-methyl Transferase 1657
FROMM, HERBERT J., AND VIRGINIA ZEWE. Kinetic Studies of the Brain Hexokinase Reaction 1661
ZEWE, VIRGINIA, AND HERBERT J. FROMM. Kinetic Studies of Rabbit Muscle Lactate Dehydrogenase 1668
HATEFI, Y., A. G. HAAVIK, AND D. E. GRIFFITHS. Studies on the Electron Transfer System. XL. Preparation and Properties of Mitochondrial DPNH-Coenzyme Q Reductase 1676
HATEFI, Y., A. G. HAAVIK, AND D. E. GRIFFITHS. Studies on the Electron Transfer System. XLI. Reduced Coenzyme Q (QH_2)-Cytochrome *c* Reductase 1681
KING, TSOO E., AND ROBERT L. HOWARD. The Preparation and Some Properties of a Reduced Diphosphopyridine Nucleotide Dehydrogenase from the Snake Venom Digest of a Heart Muscle Preparation 1686
MAXWELL, ELIZABETH S. A Study of the Mechanism by Which Steroid Hormones Influence Rabbit Liver Aldehyde Dehydrogenase 1699
TOMKINS, GORDON M., K. LEMONE YIELDING, AND JEAN F. CURRAN. The Influence of Diethylstilbestrol and Adenosine Diphosphate on Pyridine Nucleotide Coenzyme Binding by Glutamic Dehydrogenase 1704
FAWCETT, COLVIN P., AND NATHAN O. KAPLAN. Preparation and Properties of Some Nicotinamide Adenine Dinucleotide Analogues with Pentose and Purine Modifications 1709
MENDICINO, JOSEPH, AND MERTON F. UTTER. Interaction of Soluble and Mitochondrial Multienzyme Systems in Hexose Phosphate Synthesis 1716
GOLDSTEIN, LEON, E. J. STELLA, AND W. EUGENE KNOX. The Effect of Hydrocortisone on Tyrosine-α-ketoglutarate Transaminase and Tryptophan Pyrrolase Activities in the Isolated, Perfused Rat Liver 1723
KAIHARA, MASAKO, AND J. M. PRICE. The Metabolism of Quinaldic Acid, Kynurenic Acid, and Xanthurenic Acid in the Rabbit 1727
Preliminary Communications
LEVY, HARVEY M., ELIZABETH M. RYAN, SYLVIA S. SPRINGHORN, AND D. E. KOSHLAND, JR. Further Evidence for Oxygen Exchange at an Intermediate Stage in Myosin Hydrolysis PC1730
WATARI, H., EDNA B. KEARNEY, THOMAS P. SINGER, D. BASINSKI, J. HAUBER, AND C. J. LUSTY. A Comparison of Reduced Nicotinamide Adenine Dinucleotide-Cytochrome *c* Reductases from Heart Mitochondria and Their Formation from the Respiratory Chain-linked Dehydrogenase PC1731
SHULL, KENNETH H. Hepatic Phosphorylase and Adenosine Triphosphate Levels in Ethionine-treated Rats PC1734
WHITNEY, PHILIP L., AND CHARLES TANFORD. Solubility of Amino Acids in Aqueous Urea Solutions and Its Implications for the Denaturation of Proteins by Urea PC1735

JUNE 1962

VICKERY, HUBERT BRADFORD. A Suggested New Nomenclature for the Isomers of Isocitric Acid 1739
BELKHODE, M. L., AND M. C. NATH. The Conversion of C^{14}-labeled Glucose Cycloacetoacetate to L-Ascorbic Acid in Germinating *Phaseolus radiatus* 1742
OLAVARRIA, JOSÉ M., AND HÉCTOR N. TORRES. Mechanism of Action of Liver α-Amylase 1746
GREEN, SAUL, AND OSCAR BODANSKY. Effect of Methylbis(β-chlorethyl)amine (Nitrogen Mustard) on the Diphosphopyridine Nucleotidase Activity of Ehrlich Ascites Cells and the Role of This Effect in Glycolysis 1752
BENNETT, EDWARD L., JACK B. DRORI, DAVID KRECH, MARK R. ROSENZWEIG, AND S. ABRAHAM. Hexokinase Activity in Brain 1758
BROCKERHOFF, HANS, AND CLINTON E. BALLOU. On the Metabolism of the Brain Phosphoinositide Complex. 1764
MARKOVITZ, ALVIN. Isolation of a D-Talomethylose (6-Deoxy-D-talose) and D-Rhamnose (6-Deoxy-D-mannose) from Capsular Polysaccharide of a Gram-negative Bacterium 1767
KORNFELD, ROSALIND, AND DAVID H. BROWN. Preparation and Properties of Uridine Diphosphate Glucose-Glycogen Transglucosylase 1772
BU'LOCK, J. D., H. M. SMALLEY, AND G. N. SMITH. Malonate as a Biosynthetic Intermediate in *Penicillium urticae* 1778
KIRTLEY, MARY E., HARRY RUDNEY, AND I. F. DURR. The Deacylation of Diastereoisomers of β-Hydroxy-β-methyl-glutaryl Coenzyme A by Yeast Extracts .. 1781
MARTIN, DONALD B., AND P. ROY VAGELOS. The Mechanism of Tricarboxylic Acid Cycle Regulation of Fatty Acid Synthesis 1787
LIGHT, R. J., W. J. LENNARZ, AND KONRAD BLOCH. The Metabolism of Hydroxystearic Acids in Yeast 1793
MASON, NORMAN R., JOHN M. MARSH, AND KENNETH SAVARD. An Action of Gonadotropin *in Vitro* 1801
KOWALSKY, ARTHUR. Nuclear Magnetic Resonance Studies of Proteins 1807
OSBAHR, A. J., AND G. L. EICHHORN. A Study of Rotatory Dispersion of the Denaturation of Catalase and Peroxidase 1820

ANFINSEN, CHRISTIAN B., MICHAEL SELA, AND JUANITA P. COOKE. The Reversible Reduction of Disulfide Bonds in Polyalanyl Ribonuclease 1825
GLAZER, A. N., ATARA BAR-ELI, AND EPHRAIM KATCHALSKI. Preparation and Characterization of Polytyrosyl Trypsin 1832
HABER, EDGAR, AND CHRISTIAN B. ANFINSEN. Side-chain Reactions Governing the Pairing of Half-cystine Residues in Ribonuclease 1839
SMYTH, DEREK G., WILLIAM H. STEIN, AND STANFORD MOORE. On the Sequence of Residues 11 to 18 in Bovine Pancreatic Ribonuclease 1845
POTTS, JOHN T., ARIEH BERGER, JUANITA COOKE, AND CHRISTIAN B. ANFINSEN. A Reinvestigation of the Sequence of Residues 11 to 18 in Bovine Pancreatic Ribonuclease 1851
GROSS, ERHARD, AND BERNHARD WITKOP. Nonenzymatic Cleavage of Peptide Bonds: The Methionine Residues in Bovine Pancreatic Ribonuclease 1856
TOWER, DONALD B., EDMUND L. PETERS, AND JOHN R. WHERRETT. Determination of Protein-bound Glutamine and Asparagine 1861
MORA, PETER T., AND BOBBY G. YOUNG. Reversible Blocking of T2 Bacteriophage Antiserum with Polyelectrolytes 1870
JOHNSON, ANNE B., AND HAROLD J. STRECKER. The Interconversion of Glutamic Acid and Proline. IV. The Oxidation of Proline by Rat Liver Mitochondria. 1876
DAVIS, LEODIS, AND DAVID E. METZLER. The pH Dependence of the Kinetic Parameters of Threonine Dehydrase 1883
SMITH, W. JAMES, AND NORMAN KIRSHNER. Mechanism of 3,4-Dihydroxyphenylethylamine-β-hydroxylase .. 1890
WYNN, JAMES, ROBERT GIBBS, AND BETTY ROYSTER. Thyroxine Degradation. I. Study of Optimal Reaction Conditions of a Rat Liver Thyroxine-degrading System 1892
GOLDSTEIN, M., AND J. F. CONTRERA. The Substrate Specificity of Phenylamine-β-hydroxylase 1898
GREENGARD, OLGA, AND PHILIP FEIGELSON. The Purification and Properties of Liver Tryptophan Pyrrolase 1903
FEIGELSON, PHILIP, AND OLGA GREENGARD. Regulation of Liver Tryptophan Pyrrolase Activity 1908
SEGAL, H. L., DIANA S. BEATTIE, AND SARAH HOPPER. Purification and Properties of Liver Glutamic-Alanine Transaminase from Normal and Corticoid-treated Rats 1914
SCHIMKE, ROBERT T. Differential Effects of Fasting and Protein-free Diets on Levels of Urea Cycle Enzymes in Rat Liver 1921
HELMREICH, ERNST, MILTON KERN, AND HERMAN N. EISEN. Observations on the Mechanism of Secretion of γ-Globulins by Isolated Lymph Node Cells 1925
SHIGEURA, HAROLD T., AND CHARLES N. GORDON. Hadacidin, a New Inhibitor of Purine Biosynthesis 1932
SHIGEURA, HAROLD T., AND CHARLES N. GORDON. The Mechanism of Action of Hadacidin 1937
ANDERSON, LOUISE, AND MARTIN GIBBS. The Biosynthesis of Caffeine in the Coffee Plant 1941
BOLLUM, F. J. Oligodeoxyribonucleotide-primed Reactions Catalyzed by Calf Thymus Polymerase 1945
HOGENKAMP, H. P. C., J. N. LADD, AND H. A. BARKER. The Identification of a Nucleoside Derived from Coenzyme B_{12} 1950
WAHL, ROSEMARIE, AND LLOYD M. KOZLOFF. The Nucleoside Triphosphate Content of Various Bacteriophages 1953
SWARTZ, M. N., T. A. TRAUTNER, AND ARTHUR KORNBERG. Enzymatic Synthesis of Deoxyribonucleic Acid. XI. Further Studies on Nearest Neighbor Base Sequences in Deoxyribonucleic Acids 1961
JOSSE, JOHN, AND ARTHUR KORNBERG. Glucosylation of Deoxyribonucleic Acid. III. α- and β-Glucosyl Transferases from T4-infected *Escherichia coli* 1968
MACDONALD, JAMES C. Biosynthesis of Hydroxyaspergillic Acid 1977
RAMASASTRI, B. V., AND R. L. BLAKLEY. 5,10-Methylenetetrahydrofolic Dehydrogenase from Bakers' Yeast. I. Partial Purification and Some Properties. 1982
LYON, JOHN B., JR., JAMES A. BAIN, AND HARRY L. WILLIAMS. The Distribution of Vitamin B_6 in the Tissues of Two Inbred Strains of Mice Fed Complete and Vitamin B_6-deficient Rations 1989
EYLAR, EDWIN H., MORTON A. MADOFF, O. V. BRODY, AND J. L. ONCLEY. The Contribution of Sialic Acid to the Surface Charge of the Erythrocyte 1992
ROBINSON, J. C., L. KEAY, RUBENS MOLINARI, AND IRWIN W. SIZER. L-α-Hydroxy Acid Oxidases of Hog Renal Cortex 2001
AVRON, MORDHAY. Light-dependent Adenosine Triphosphatase in Chloroplasts 2011
UDAKA, SHIGEZO, AND BIRGIT VENNESLAND. Properties of Triphosphopyridine Nucleotide-linked Dihydroorotic Dehydrogenase 2018
NEUBERT, DIETHER, TURPIN H. ROSE, AND ALBERT L. LEHNINGER. Assay and Cellular Distribution of Mitochondrial "Contraction Factor" 2025
CORMIER, MILTON J. Studies on the Bioluminescence of *Renilla reniformis*. II. Requirement for 3',5'-Diphosphoadenosine in the Luminescent Reaction 2032
SEGOVIA-RIQUELME, NATIVIDAD, IRIS, CAMPOS, WANDA SOLODKOWSKA, GRACIELA GONZÁLEZ, ROSA ALVARADO, AND J. MARDONES. Metabolism of Labeled Ethanol, Acetate, Pyruvate, and Butyrate in "Drinker" and "Nondrinker" Rats 2038
Preliminary Communications
MORREALE DE ESCOBAR, GABRIELLA, FRANCISCO ESCOBAR DEL REY, AND PILAR LLORENTE RODRIGUEZ. Activation by Inert Proteins of the Flavin-induced Photodependent Deiodination of Thyroxine PC2041
GHOLSON, R. K., YASUTOMI NISHIZUKA, ARATA ICHIYAMA, HITOSHI KAWAI, SHIGENOBU NAKAMURA, AND OSAMU HAYAISHI. New Intermediates in the Catabolism of Tryptophan in Mammalian Liver. PC2043

JULY 1962

SAWAI, TERUO, AND EDWARD J. HEHRE. A Novel Amylase (*Candida* Transglucosyl-amylase) That Catalyzes Glucosyl Transfer from Starch and Dextrins 2047

SAZ, HOWARD J., AND ALICE WELL. Pathway of Formation of α-Methylvalerate by *Ascaris lumbricoides* 2053

MUDD, J. B., AND T. T. MCMANUS. Metabolism of Acetate by Cell-free Preparations from Spinach Leaves .. 2057

SCHEUERBRANDT, GÜNTER, AND KONRAD BLOCH. Unsaturated Fatty Acids in Microorganisms 2064

FUJINO, Y., AND IRVING ZABIN. The Configuration of Sphingosine Synthesized in Rat Brain Homogenates .. 2069

WERBIN, HAROLD, I. L. CHAIKOFF, AND MILES R. IMADA. 5α-Cholestan-3β-ol: Its Distribution in Tissues and Its Synthesis from Cholesterol in the Guinea Pig 2072

NEWMAN, H. A. I., AND D. B. ZILVERSMIT. Quantitative Aspects of Cholesterol Flux in Rabbit Atheromatous Lesions 2078

CASPI, ELIAHU, RALPH I. DORFMAN, BADAR T. KHAN, GEORGE ROSENFELD, AND WALTER SCHMID. Degradation of Corticosteroids. VI. Origin of the Carbon Atoms of Steroid Hormones Biosynthesized *in Vitro* in the Bovine Adrenal from Acetate-1-C^{14} 2085

WELIKY, IRVING, AND LEWIS L. ENGEL. The Conversion *in Vitro* of 17-Hydroxypregnenolone to Cortisol by a Human Adrenal Tumor 2089

VANDERHEIDEN, BERNARDO S., JOSEPHINE O. MEINHART, R. GENE DODSON, AND EDWIN G. KREBS. The Preparation and Properties of Crystalline Yeast Aldolase .. 2095

MARTIN, CHARLES J. Inhibition of Trypsin, Chymotrypsin, and Plasmin by an Inhibitor Isolated from Sheep Serum 2099

CHERVENKA, CHARLES H. The Differentiation of Two Forms of Chymotrypsin by Their Rates of Urea Denaturation 2105

VELICK, SIDNEY F., AND JOHN VAVRA. A Kinetic and Equilibrium Analysis of the Glutamic Oxaloacetate Transaminase Mechanism 2109

WILLIAMS, J. W., AND D. D. DONERMEYER. The Interaction of Bovine Serum Albumin and Its Chicken Antibodies 2123

SCHWERT, GEORGE W., DAVID B. S. MILLAR, AND YASUO TAKENAKA. Preparation of Crystalline Lactic Dehydrogenase from Beef Heart 2131

MILLAR, DAVID B. S. Physico-chemical Properties of Lactic Dehydrogenase 2135

HALENZ, DONALD R., JAN-YUNG FENG, CARMAN S. HEGRE, AND M. DANIEL LANE. Some Enzymic Properties of Mitochondrial Propionyl Carboxylase 2140

MARGOLIASH, E., J. R. KIMMEL, ROBERT L. HILL, AND WILLIAM R. SCHMIDT. Amino Acid Composition of Horse Heart Cytochrome *c* 2148

MARGOLIASH, E., AND EMIL L. SMITH. Isolation and Amino Acid Composition of Chymotryptic Peptides from Horse Heart Cytochrome *c* 2151

MARGOLIASH, E. Amino Acid Sequence of Chymotryptic Peptides from Horse Heart Cytochrome *c* 2161

EPSTEIN, CHARLES J., AND CHRISTIAN B. ANFINSEN. The Reversible Reduction of Disulfide Bonds in Trypsin and Ribonuclease Coupled to Carboxymethyl Cellulose 2175

MORRIS, CLAYTON J., JOHN F. THOMPSON, SAM ASEN, AND FILADELFO IRREVERRE. The Isolation of γ-L-Glutamyl-β-alanine from Iris Bulbs 2180

PETERS, THEODORE, JR. The Biosynthesis of Rat Serum Albumin. III. Amino Acid Composition of Rat Albumin 2182

GUIDOTTI, GUIDO, ROBERT J. HILL, AND WILLIAM KONIGSBERG. The Structure of Human Hemoglobin. II. The Separation and Amino Acid Composition of the Tryptic Peptides from the α and β Chains 2184

SILMAN, H. I., JOHN J. CEBRA, AND DAVID GIVOL. The Carboxyl Terminal Amino Acids of Rabbit γ-Globulin 2196

GJESSING, ERLAND C., AND JOHN C. HARTNETT. Crystallization and Characterization of an Esteroproteolytic Enzyme from Porcine Pancreas 2201

SARID, SARAH, ARIEH BERGER, AND EPHRAIM KATCHALSKI. Proline Iminopeptidase. II. Purification and Comparison with Iminodipeptidase (Prolinase) 2207

LEIBMAN, KENNETH C., AND SUSAN K. FELLNER. Some Aspects of Serine Metabolism: Actions of Isoserine and Other Inhibitors 2213

DEKKER, EUGENE E., AND UMADAS MAITRA. Conversion of γ-Hydroxyglutamate to Glyoxylate and Alanine; Purification and Properties of the Enzyme System ... 2218

BREMER, JON. Carnitine in Intermediary Metabolism. Reversible Acetylation of Carnitine by Mitochondria 2228

RAO, D. RAJAGOPAL, AND VICTOR W. RODWELL. Metabolism of Pipecolic Acid in a *Pseudomonas* Species. I. α-Aminoadipic and Glutamic Acids 2232

BASSO, LAWRENCE V., D. RAJAGOPAL RAO, AND VICTOR W. RODWELL. Metabolism of Pipecolic Acid in a *Pseudomonas* Species. II. Δ^1-Piperideine-6-carboxylic Acid and α-Aminoadipic Acid-δ-Semialdehyde 2239

GERBER, GEORG B., GISELA GERBER, THOMAS R. KOSZALKA, AND LEON L. MILLER. The Rate of Creatine Synthesis in the Isolated, Perfused Rat Liver 2246

GREENE, RONALD C. Biosynthesis of Dimethyl-β-propiothetin 2251

PEISACH, J., AND HAROLD J. STRECKER. The Interconversion of Glutamic Acid and Proline. V. The Reduction of Δ^1-Pyrroline-5-carboxylic Acid to Proline 2255

RENSON, JEAN, HERBERT WEISSBACH, AND SIDNEY UDENFRIEND. Hydroxylation of Tryptophan by Phenylalanine Hydroxylase 2261

ROSENBERG, LEON E., SYLVIA J. DOWNING, AND STANTON SEGAL. Competitive Inhibition of Dibasic Amino Acid Transport in Rat Kidney 2265

VALENTINE, R. C., R. BOJANOWSKI, ELIZABETH GAUDY, AND R. S. WOLFE. Mechanism of the Allantoin Fermentation 2271

ROBERTS, DEWAYNE, AND CHARLES A. NICHOL. Biosynthesis of Thymine and Formyltetrahydrofolate by Vitamin B_{12}-deficient Cells of *Lactobacillus leichmannii* . 2278

HALL, ROSS H. Separation of Nucleic Acid Degradation Products on Partition Columns 2283
FINK, ROBERT M., AND KAY FINK. Utilization of Radiocarbon from Thymidine and Other Precursors of Ribonucleic Acid in *Neurospora crassa* 2289
HERTTING, GEORG, AND ELWOOD H. LABROSSE. Biliary and Urinary Excretion of Metabolites of 7-H^3-Epinephrine in the Rat 2291
ICHIHARA, AKIRA, KOZABURO ADACHI, KEIICHI HOSOKAWA, AND YOSHIRO TAKEDA. The Enzymatic Hydroxylation of Aromatic Carboxylic Acids; Substrate Specificities of Anthranilate and Benzoate Oxidases .. 2296
STOKER, J. R., AND D. M. BELLIS. The Biosynthesis of Coumarin in *Melilotus alba* 2303
DOUMAS, BASIL, AND H. G. BIGGS. The Nonenzymatic Decomposition of 5-Methylbarbituric Acid 2306
KIRSHNER, NORMAN. Uptake of Catecholamines by a Particulate Fraction of the Adrenal Medulla 2311
VESCIA, ALESSANDRO, AND GUIDO DI PRISCO. Studies on Purified 3-Hydroxyanthranilic Acid Oxidase 2318
BRADY, ROSCOE O., ESTHER G. CASTANERA, AND H. A. BARKER. The Enzymatic Synthesis of Cobamide Coenzymes 2325
ZELLER, E. ALBERT, AND SATYAPRIYA SARKAR. Amine Oxidases. XIX. Inhibition of Monoamine Oxidase by Phenylcyclopropylamines and Iproniazid 2333
BEINERT, HELMUT, D. E. GRIFFITHS, DAVID C. WHARTON, AND R. H. SANDS. Properties of the Copper Associated with Cytochrome Oxidase as Studied by Paramagnetic Resonance Spectroscopy 2337
MASSEY, VINCENT, AND GRAHAM PALMER. Charge Transfer Complexes of Lipoyl Dehydrogenase and Free Flavins 2347
MARGOLIASH, E., AND A. SCHEJTER. Kinetics of the Irreversible Inhibition of Catalase by 3-Amino-1,2,4-triazole in the Presence of Hydrogen Peroxide and Catalase-Hydrogen Peroxide Complex I Hydrogen Donors 2359
KIRKMAN, HENRY N. Glucose 6-Phosphate Dehydrogenase from Human Erythrocytes. I. Further Purification and Characterization 2364
KIRKMAN, HENRY N., AND ELIZABETH M. HENDRICKSON. Glucose 6-Phosphate Dehydrogenase from Human Erythrocytes. II. Subactive States of the Enzyme from Normal Persons 2371
AVI-DOR, Y., JOHN M. OLSON, MARY D. DOHERTY, AND NATHAN O. KAPLAN. Fluorescence of Pyridine Nucleotides in Mitochondria 2377
PUMPHREY, ALISON M. Studies on the Electron Transfer System. XLV. Some Effects of Antimycin on Cytochrome *b* 2384
CHANCE, BRITTON, AND GREGORY R. SCHONBAUM. The Nature of the Primary Complex of Catalase 2391
FRIEDEN, CARL. The Effect of pH and Other Variables on the Dissociation of Beef Liver Glutamic Dehydrogenase 2396
ISHIKAWA, SHINJI, AND ALBERT L. LEHNINGER. Reconstitution of Oxidative Phosphorylation in Preparations from *Micrococcus lysodeikticus* 2401
Preliminary Communications
STADTMAN, THRESSA. Lysine Fermentation to Fatty Acids and Ammonia: A Cobamide Coenzyme-dependent Process PC2409
ASANO, AKIRA, ARNOLD F. BRODIE, ARTHUR F. WAGNER, PAUL E. WITTREICH, AND KARL FOLKERS. The New Synthetic 6-Chromanyl Phosphate of Vitamin $K_{1(20)}$ and Its Behavior in an Enzymatic System from *Mycobacterium phlei* PC2411
KATAGIRI, MASAYUKI, SHOZO YAMAMOTO, AND OSAMU HAYAISHI. Flavin Adenine Dinucleotide Requirement for the Enzymic Hydroxylation of Salicylic Acid PC2413
CAUGHEY, WINSLOW S., AND J. LYNDAL YORK. Isolation and Some Properties of the Green Heme of Cytochrome Oxidase from Beef Heart Muscle PC2414
BRADY, ROSCOE O. Studies on the Total Enzymatic Synthesis of Cerebrosides PC2416

AUGUST 1962

HAMMEN, CARL S., AND SUSAN C. LUM. Carbon Dioxide Fixation in Marine Invertebrates. III. The Main Pathway in Flatworms 2419
HEATH, EDWARD C., AND MOHAMMAD ALI GHALAMBOR. The Metabolism of L-Fucose. I. The Purification and Properties of L-Fuculose Kinase 2423
GHALAMBOR, MOHAMMAD ALI, AND EDWARD C. HEATH. The Metabolism of L-Fucose. II. The Enzymatic Cleavage of L-Fuculose 1-Phosphate 2427
RAMAMURTI, K., AND C. P. JACKSON. Formation of D-Glucose, Cellobiose, and Other Saccharides during Synthesis of Cellulose by *Acetobacter acetigenum* in a Lactate-buffered Glycerol Medium 2434
SNYDER, H. E., AND H. J. PHAFF. The Pattern of Action of Inulinase from *Saccharomyces fragilis* on Inulin 2438
JOURDIAN, GEORGE W., AND SAUL ROSEMAN. The Sialic Acids. II. Preparation of *N*-Glycolylhexosamines, *N*-Glycolylhexosamine 6-Phosphates, Glycolyl Coenzyme A, and Glycolyl Glutathione 2442
BRUNETTI, PAOLO, GEORGE W. JOURDIAN, AND SAUL ROSEMAN. The Sialic Acids. III. Distribution and Properties of Animal *N*-Acetylneuraminic Aldolase 2447
VOLK, WESLEY A., AND J. L. LARSEN. β-Keto-L-gulonic Acid as an Intermediate in the Bacterial Metabolism of Ascorbic Acid 2454
MCGARRAHAN, JOHN F., AND FRANK MALEY. Hexosamine Metabolism. I. The Metabolism *in Vivo* and *in Vitro* of D-Glucosamine-1-C^{14} and *N*-Acetyl-D-glucosamine-1-C^{14} in Rat Liver 2458
KATZ, JOSEPH, AND JACK KORNBLATT. Propionate Metabolism by Slices of Mammary Gland and Liver of Lactating Rat 2466
TWAROG, R., AND R. S. WOLFE. Enzymatic Phosphorylation of Butyrate 2474
BERLINER, DAVID L., DAVID M. CAZES, AND CHARLES J. NABORS, JR. Adrenal 3β-Hydroxysteroid Dehydrogenase Activity on C_{17}-hydroxylated Δ^5-Pregnenes, C_{12}-hydroxylated Δ^5-Pregnenes, or Both 2478
HERSKOVITS, THEODORE T., AND MICHAEL LASKOWSKI, JR. Location of Chromophoric Residues in Proteins

by Solvent Perturbation. I. Tyrosyls in Serum Albumins 2481

Ray, William J., Jr., and D. E. Koshland, Jr. Identification of Amino Acids Involved in Phosphoglucomutase Action 2493

Scheraga, Harold A., George Némethy, and Izchak Z. Steinberg. The Contribution of Hydrophobic Bonds to the Thermal Stability of Protein Conformations 2506

Clark, Patricia, Michael R. Rachinsky, and Joseph F. Foster. Moving Boundary Electrophoresis Behavior and Acid Isomerization of Human Mercaptalbumin 2509

Sogami, Masaru, and Joseph F. Foster. Resolution of Oligomeric and Isomeric Forms of Plasma Albumin by Zone Electrophoresis on Polyacrylamide Gel 2514

Maxfield, Myles, and David Stefanye. The Amino Acid Composition of Normal Human Urinary Mucoprotein 2522

Kimmel, J. R., George K. Kato, Antonio C. M. Paiva, and Emil L. Smith. Tryptic Digest of Papain. I. Isolation and Sequence of Some Peptides from the Oxidized Protein 2525

Light, Albert. The Carboxyl-terminal Sequence of Papain 2535

Light, Albert, and Emil L. Smith. Chymotryptic Digest of Papain. IV. Peptides from the Oxidized, Carboxymethylated, and Denatured Protein 2537

Konigsberg, William, and Robert J. Hill. The Structure of Human Hemoglobin. III. The Sequence of Amino Acids in the Tryptic Peptides of the α Chain. 2547

Berl, Soll, Genkichiro Takagaki, Donald D. Clarke, and Heinrich Waelsch. Metabolic Compartments *in Vivo*. Ammonia and Glutamic Acid Metabolism in Brain and Liver 2562

Berl, Soll, Genkichiro Takagaki, Donald D. Clarke, and Heinrich Waelsch. Carbon Dioxide Fixation in the Brain 2570

Van Pilsum, John F., and Thomas M. Canfield. Transamidinase Activities, *in Vitro*, of Kidneys from Rats Fed Diets Supplemented with Nitrogen-containing Compounds 2574

Schirch, LaVerne, and Merle Mason. Serine Transhydroxymethylase: Spectral Properties of the Enzyme-bound Pyridoxal-5-phosphate 2578

Helmreich, Ernst, and David M. Kipnis. Amino Acid Transport in Lymph Node Cells 2582

Levenberg, Bruce. Role of L-Glutamine as Donor of Carbamyl Nitrogen for the Enzymatic Synthesis of Citrulline in *Agaricus bisporus* 2590

Ives, David H., and Cyrus P. Barnum. Radiochemical Equilibration of Phosphorus-containing Precursors of Deoxyribonucleic Acid in Regenerating Rat Liver ... 2599

Ives, David H., and Cyrus P. Barnum. The Metabolic Stability of Deoxyribonucleic Acid Phosphorus in Regenerating Rat Liver 2604

Furth, J. J., Jerard Hurwitz, and Monika Anders. The Role of Deoxyribonucleic Acid in Ribonucleic Acid Synthesis. I. The Purification and Properties of Ribonucleic Acid Polymerase 2611

Sulkowski, E., and M. Laskowski, Sr. Mechanism of Action of Micrococcal Nuclease on Deoxyribonucleic Acid 2620

Georgatsos, John G., W. C. Unterholzner, and M. Laskowski, Sr. Characterization of the Digestion Products of Deoxyribonucleic Acid by Purified Streptococcal Deoxyribonuclease (Streptodornase) ... 2626

Henderson, J. Frank. Feedback Inhibition of Purine Biosynthesis in Ascites Tumor Cells 2631

Edmonds, Mary, and Richard Abrams. Nature of a Polynucleotide Required for Polyribonucleotide Formation from Adenosine Triphosphate with an Enzyme from Thymus Nuclei 2636

Heinstein, P. F., F. H. Smith, and S. B. Tove. Biosynthesis of C^{14}-labeled Gossypol 2643

Hoskins, Dale D., H. R. Whiteley, and Bruce Mackler. The Reduced Diphosphopyridine Nucleotide Oxidase of *Streptococcus faecalis*: Purification and Properties 2647

Phillips, Alvah H., and Robert G. Langdon. Hepatic Triphosphopyridine Nucleotide-Cytochrome *c* Reductase: Isolation, Characterization, and Kinetic Studies 2652

Hatefi, Y., A. G. Haavik, L. R. Fowler, and D. E. Griffiths. Studies on the Electron Transfer System. XLII. Reconstitution of the Electron Transfer System 2661

Vasington, Frank D., and Jerome V. Murphy. Ca^{++} Uptake by Rat Kidney Mitochondria and Its Dependence on Respiration and Phosphorylation 2670

Zalkin, H., A. L. Tappel, K. A. Caldwell, S. Shibko, I. D. Desai, and T. A. Holliday. Increased Lysosomal Enzymes in Muscular Dystrophy of Vitamin E-deficient Rabbits 2678

Mandelstam, Paul, Richard Loercher, and Jack L. Strominger. A Uridine Diphosphoacetylmuramyl Hexapeptide from Penicillin-treated *Streptococcus faecalis* 2683

Ito, Eiji, and Jack L. Strominger. Enzymatic Synthesis of the Peptide in Bacterial Uridine Nucleotides. I. Enzymatic Addition of L-Alanine, D-Glutamic Acid, and L-Lysine 2689

Ito, Eiji, and Jack L. Strominger. Enzymatic Synthesis of the Peptide in Bacterial Uridine Nucleotides. II. Enzymatic Synthesis and Addition of D-Alanyl-D-alanine 2696

MacGregor, J., and B. E. C. Nordin. Equilibration Studies with Human Bone Powder. II. The Role of the Carbonate Ion 2704

Preliminary Communications

Rittenberg, D., and L. Ponticorvo. On the Quantitative Significance of the Pentose Pathway in *Escherichia coli* PC2709

Novoa, William B., and Santiago Grisolia. Synthesis of Adenosine Triphosphate from Acetyl Phosphate by Carbamyl Phosphate Synthetase .. PC2710

Kaufman, Seymour. On the Structure of the Phenylalanine Hydroxylation Cofactor PC2712

Reynolds, John J., and Gene M. Brown. Enzymatic Formation of the Pteridine Moiety of Folic Acid from Guanine Compounds PC2713

LAVATE, W. V., J. R. DYER, C. M. SPRINGER, AND RONALD BENTLEY. A New, Naturally Occurring Member of the Coenzyme Q Group: Tetrahydrocoenzyme Q_{10} PC2715

SEPTEMBER 1962

CORRECTIONS 2717
BLOOM, SANDRA J., AND MARVIN J. JOHNSON. The Pyruvate Carboxylase of *Aspergillus niger* 2718
NISHIZUKA, YASUTOMI, AND OSAMU HAYAISHI. Enzymic Formation of Lactobionic Acid from Lactose 2721
CAMPO, ROBERT D., AND DOMINIC D. DZIEWIATKOWSKI. Intracellular Synthesis of Protein-polysaccharides by Slices of Bovine Costal Cartilage 2729
AVIGAD, GAD, D. AMARAL, C. ASENSIO, AND B. L. HORECKER. The D-Galactose Oxidase of *Polyporus circinatus* 2736
BLOOM, BEN, AND DANIEL W. FOSTER. Source of Phosphoenolpyruvate for Hexose Synthesis in Liver and Muscle as Studied with Aspartate-3-C^{14} 2744
BAMJI, MAHTAB S., H. R. CAMA, AND P. R. SUNDARESAN. Anhydrovitamin A_2 and Rehydrovitamin A_2. II. ... 2747
WAITE, MOSELEY, AND SALIH J. WAKIL. Studies on the Mechanism of Fatty Acid Synthesis. XII. Acetyl Coenzyme A Carboxylase 2750
DOLE, VINCENT P. Insulin-like Actions of Ribonucleic Acid, Adenylic Acid, and Adenosine 2758
WESTPHAL, ULRICH, AND BILLY D. ASHLEY. Steroid-Protein Interactions. VIII. Structure of Δ^4-3-Ketosteroids in Relation to Spectrophotometric Interaction with Human Serum Albumin 2763
SEKINE, T., L. M. BARNETT, AND W. WAYNE KIELLEY. The Active Site of Myosin Adenosine Triphosphatase. I. Localization of One of the Sulfhydryl Groups 2769
ANTONINI, ERALDO, JEFFRIES WYMAN, JR., ALESSANDRO ROSSI-FANELLI, AND ANTONIO CAPUTO. Studies on the Relations between Molecular and Functional Properties of Hemoglobin. III. The Influence of Salts on the Bohr Effect in Human Hemoglobin 2773
EDELHOCH, HAROLD. The Properties of Thyroglobulin. VIII. The Iodination of Thyroglobulin 2778
EDELHOCH, HAROLD, AND R. E. LIPPOLDT. The Properties of Thyroglobulin. IX. The Molecular Properties of Iodinated Thyroglobulin 2788
MARTONOSI, A. Studies on Actin. VII. Ultracentrifugal Analysis of Partially Polymerized Actin Solutions 2795
FUJIOKA, HIDEKO, AND KAZUTOMO IMAHORI. Studies on the Binding of Carboxypeptidase A and Several Competitive Inhibitors 2804
YUNIS, ADEL A., EDMOND H. FISCHER, AND EDWIN G. KREBS. Comparative Studies on Glycogen Phosphorylase. IV. Purification and Properties of Rabbit Heart Phosphorylase 2809
BRUNISH, ROBERT. The Nature of the Lacrimal Mucoprotein Stimulated by Exophthalmos-producing Substance 2816
PERKOFF, GERALD T., ROBERT L. HILL, DOUGLAS M. BROWN, AND FRANK H. TYLER. The Characterization of Adult Human Myoglobin 2820
ROTHSTEIN, MORTON, KEITH E. COOKSEY, AND DAVID M. GREENBERG. Metabolic Conversion of Pipecolic Acid to α-Aminoadipic Acid 2828
DAUGHADAY, WILLIAM H., AND IDA KOZAK MARIZ. The Formation of Free Hydroxyproline by Rat Cartilage *in Vitro* 2831
SELLINGER, OTTO Z., AND F. DE BALBIAN VERSTER. Glutamine Synthetase of Rat Cerebral Cortex: Intracellular Distribution and Structural Latency 2836
RAVEL, JOANNE M., S. J. NORTON, JEAN S. HUMPHREYS, AND WILLIAM SHIVE. Asparagine Biosynthesis in *Lactobacillus arabinosus* and Its Control by Asparagine through Enzyme Inhibition and Repression 2845
CONWAY, THOMAS W., EDWIN M. LANSFORD, JR., AND WILLIAM SHIVE. Purification and Substrate Specificity of a Phenylalanine-activating Enzyme from *Escherichia coli* 9723 2850
GOLDSTEIN, LEON, W. EUGENE KNOX, AND E. J. BEHRMAN. Studies on the Nature, Inducibility, and Assay of the Threonine and Serine Dehydrase Activities of Rat Liver 2855
REYNAFARJE, BALTAZAR, AND PETER MORRISON. Myoglobin Levels in Some Tissues from Wild Peruvian Rodents Native to High Altitude 2861
WHITFELD, PAUL R. Identification of End Groups in Tobacco Mosaic Virus Ribonucleic Acid by Enzymatic Hydrolysis 2865
RADDING, CHARLES M., JOHN JOSSE, AND ARTHUR KORNBERG. Enzymatic Synthesis of Deoxyribonucleic Acid. XII. A Polymer of Deoxyguanylate and Deoxycytidylate 2869
RADDING, CHARLES M., AND ARTHUR KORNBERG. Enzymatic Synthesis of Deoxyribonucleic Acid. XIII. Kinetics of Primed and *de Novo* Synthesis of Deoxynucleotide Polymers 2877
RUSHIZKY, GEORGE W., AND HERBERT A. SOBER. Characterization of the Major Compounds Found in Ribonuclease T_1 Digests of Ribonucleic Acid. II. Tetranucleotides 2883
FINK, ROBERT M., AND KAY FINK. Relative Retention of H^3 and C^{14} Labels of Nucleosides Incorporated into Nucleic Acids of *Neurospora* 2889
WITONSKY, P., AND S. KIRKWOOD. Enzyme Systems Concerned with the Synthesis of Monoiodotyrosine. IV. Further Studies on the Particulate System 2892
RABINOWITZ, JESSE C., AND W. E. PRICER, JR. Formyltetrahydrofolate Synthetase. I. Isolation and Crystallization of the Enzyme 2898
HIMES, RICHARD H., AND JESSE C. RABINOWITZ. Formyltetrahydrofolate Synthetase. II. Characteristics of the Enzyme and the Enzymic Reaction 2903
HIMES, RICHARD H., AND JESSE C. RABINOWITZ. Formyltetrahydrofolate Synthetase. III. Studies on the Mechanism of the Reaction 2915
FINKLE, BERNARD J., J. C. LEWIS, J. W. CORSE, AND R. E. LUNDIN. Enzyme Reactions with Phenolic Compounds: Formation of Hydroxystyrenes through the Decarboxylation of 4-Hydroxycinnamic Acids by *Aerobacter* 2926

KRISHNASWAMY, P. R., VAIRA PAMILJANS, AND ALTON MEISTER. Studies on the Mechanism of Glutamine Synthesis: Evidence for the Formation of Enzyme-bound Activated Glutamic Acid 2932

KING, TSOO E., ROBERT L. HOWARD, DAVID F. WILSON, AND JEROME C. R. LI. The Partition of Flavins in the Heart Muscle Preparations and Heart Mitochondria 2941

GELLER, DAVID M. Oxidative Phosphorylation in Extracts of *Rhodospirillum rubrum* 2947

SHICHI, H., AND D. P. HACKETT. Studies on the *b*-Type Cytochromes from Mung Bean Seedlings. I. Purification of Cytochromes *b*-555 and *b*-561 2955

SHICHI, H., AND D. P. HACKETT. Studies on the *b*-Type Cytochromes from Mung Bean Seedlings. II. Some Properties of Cytochromes *b*-555 and *b*-561 2959

MASSEY, VINCENT, AND N. M. ATHERTON. On the Reaction between Dihydrolipoic Acid and Flavins: Spectral Changes Induced by Flavin-Peroxide Interaction 2965

MACKLER, BRUCE, P. J. COLLIPP, HELEN M. DUNCAN, N. APPAJI RAO, AND F. M. HUENNEKENS. An Electron Transport Particle from Yeast: Purification and Properties 2968

FRISELL, WILHELM R., JOHN R. CRONIN, AND COSMO G. MACKENZIE. Coupled Flavoenzymes in Mitochondrial Oxidation of *N*-Methyl Groups. Purification of the Electron Transfer Flavoprotein 2975

LIAO, SHUTSUNG, JOHN T. DULANEY, AND H. G. WILLIAMS-ASHMAN. Purification and Properties of a Flavoprotein Catalyzing the Oxidation of Reduced Ribosyl Nicotinamide 2981

BEINERT, HELMUT, AND WILHELM R. FRISELL. The Functional Identity of the Electron-transferring Flavoproteins of the Fatty Acyl Coenzyme A and Sarcosine Dehydrogenase Systems 2988

KRANE, STEPHEN M., AND MELVIN J. GLIMCHER. Transphosphorylation from Nucleoside Di- and Triphosphates by Apatite Crystals 2991

TANAKA, RYO, AND L. G. ABOOD. On the Adenosine Triphosphatase Activity of Rat Brain Mitochondria 2999

Preliminary Communications

BERGSTRÖM, SUNE, AND BENGT SAMUELSSON. Isolation of Prostaglandin E_1 from Human Seminal Plasma. II. Prostaglandins and Related Factors. PC3005

SINGH, AJAIB, EDWARD R. THORNTON, AND F. H. WESTHEIMER. The Photolysis of Diazoacetylchymotrypsin PC3006

OCTOBER 1962

TSUTSUI, ETHEL ASHWORTH, PAUL A. MARKS, AND PAUL REICH. Effect of Dehydroepiandrosterone on Glucose 6-Phosphate Dehydrogenase Activity and Reduced Triphosphopyridine Nucleotide Formation in Adrenal Tissue 3009

OKAZAKI, REIJI, TUNEKO OKAZAKI, JACK L. STROMINGER, AND A. M. MICHELSON. Thymidine Diphosphate 4-Keto-6-deoxy-D-glucose, an Intermediate in Thymidine Diphosphate L-Rhamnose Synthesis in *Escherichia coli* Strains 3014

FROMM, HERBERT J., AND VIRGINIA ZEWE. Kinetic Studies of Yeast Hexokinase 3027

ISSELBACHER, KURT J., MARILYN F. CHRABAS, AND RITA C. QUINN. The Solubilization and Partial Purification of a Glucuronyl Transferase from Rabbit Liver Microsomes 3033

ÖZAND, PINAR, H. T. NARAHARA, AND CARL F. CORI. Studies of Tissue Permeability. VIII. The Effect of Anaerobiosis on Glucose Uptake in Frog Sartorius Muscle 3037

SIU, PATRICK M. L., AND HARLAND G. WOOD. Phosphoenolpyruvic Carboxytransphosphorylase, a CO_2 Fixation Enzyme from Propionic Acid Bacteria 3044

KORNFELD, STUART, AND LUIS GLASER. The Synthesis of Thymidine-linked Sugars. V. Thymidine Diphosphate-Amino Sugars 3052

NAITO, KOJI, AND FRED H. WILT. The Conversion of Vitamin A_1 to Retinene$_2$ in a Fresh-water Fish 3060

MAZUMDER, RAJARSHI, TAIJI SASAKAWA, YOSHITO KAZIRO, AND SEVERO OCHOA. Metabolism of Propionic Acid in Animal Tissues. IX. Methylmalonyl Coenzyme A Racemase 3065

ADAMS, JULIA A., JOSEPH JARABAK, AND PAUL TALALAY. The Steroid Specificity of the 17β-Hydroxysteroid Dehydrogenase of Human Placenta 3069

HARMISON, CHARLES R., AND WALTER H. SEEGERS. Some Physicochemical Properties of Bovine Autoprothrombin II 3074

YAMADA, HIDEAKI, AND KERRY T. YASUNOBU. Monoamine Oxidase. II. Copper, One of the Prosthetic Groups of Plasma Monoamine Oxidase 3077

DUS, KARL, ROBERT G. BARTSCH, AND MARTIN D. KAMEN. The Diheme Peptide of *Chromatium* RHP 3083

WOLFF, EDITH CLARKE, E. W. SCHIRMER, AND J. E. FOLK. The Kinetics of Carboxypeptidase B Activity. I. Kinetic Parameters 3094

FOLK, J. E., EDITH CLARKE WOLFF, AND E. W. SCHIRMER. The Kinetics of Carboxypeptidase B Activity. II. Kinetic Parameters of the Cobalt and Cadmium Enzymes 3100

FOLK, J. E., EDITH CLARKE WOLFF, E. W. SCHIRMER, AND JEROME CORNFIELD. The Kinetics of Carboxypeptidase B Activity. III. Effects of Alcohol on the Peptidase and Esterase Activities; Kinetic Models 3105

TONOMURA, YUJI, KAZUKO SEKIYA, AND KIICHI IMAMURA. The Optical Rotatory Dispersion of Myosin A. I. Effect of Inorganic Salt 3110

YOUNG, D. MICHAEL, WILLIAM F. HARRINGTON, AND W. WAYNE KIELLEY. The Dissociation and Reassociation of the Subunit Polypeptide Chains of Myosin ... 3116

DOOLITTLE, RUSSELL F., J. LAWRENCE ONCLEY, AND DOUGLAS M. SURGENOR. Species Differences in the Interaction of Thrombin and Fibrinogen 3123

NEUHAUS, FRANCIS C. The Enzymatic Synthesis of D-Alanyl-D-alanine. II. Kinetic Studies on D-Alanyl-D-alanine Synthetase 3128

SEAL, ULYSSES S., AND R. P. DOE. Corticosteroid-bind-

ing Globulin. I. Isolation from Plasma of Diethylstilbestrol-treated Men 3136
LEWIS, U. J. Enzymatic Transformations of Growth Hormone and Prolactin 3141
HOPE, DEREK B., AND VINCENT DU VIGNEAUD. Synthesis of Desamino-desoxy-oxytocin, a Biologically Active Analogue of Oxytocin 3146
HILL, ROBERT J., AND WILLIAM KONIGSBERG. The Structure of Human Hemoglobin. IV. The Chymotryptic Digestion of the α Chain of Human Hemoglobin 3151
KONIGSBERG, WILLIAM, AND ROBERT J. HILL. The Structure of Human Hemoglobin. V. The Digestion of the α Chain of Human Hemoglobin with Pepsin 3157
FOSTER, JOSEPH F., AND PATRICIA CLARK. A Re-examination of the Acid Titration Behavior of Human Mercaptalbumin. Changes in Amphoteric Properties Associated with the N–F Transformation 3163
WILSON, EDITH M., AND ESMOND E. SNELL. Metabolism of α-Methylserine. I. α-Methylserine Hydroxymethyltransferase 3171
WILSON, EDITH M., AND ESMOND E. SNELL. Metabolism of α-Methylserine. II. Stereospecificity of α-Methylserine Hydroxymethyltransferase 3180
JOSHI, JAYANT G., AND PHILIP HANDLER. Metabolism of Trigonelline 3185
HOPPER, SARAH, AND HAROLD L. SEGAL. Kinetic Studies of Rat Liver Glutamic-Alanine Transaminase 3189
MANDELES, STANLEY, AND EUFEMIO D. DUCAY. Site of Egg White Protein Formation 3196
FRANKEL, FRED R., AND CHARLES F. CRAMPTON. Chromatographic Fractionation of Deoxyribonucleic Acids 3200
SMITH, CURTIS G., CAROL CONNELLY, AND MARTHA SMEAD. The Utilization of the Ureide Carbon of Adenine in the Biosynthesis of Riboflavin in *Eremothecium ashbyii* 3207
MORA, PETER T. Relative Importance of Electrostatic Forces in the Interaction of Ribonuclease and Ribonucleic Acid 3210
SCOTT, ROBERT B., AND GEORGE BOSWORTH BROWN. The Action of Xanthine Oxidase on Some 2-Substituted Adenines 3215
WEISSBACH, HERBERT, BETTY G. REDFIELD, AND ALAN PETERKOFSKY. Biosynthesis of the B_{12} Coenzyme: Requirements for Release of Cyanide and Spectral Changes 3217
KOUKOL, JANE, P. MILJANICH, AND ERIC E. CONN. The Metabolism of Aromatic Compounds in Higher Plants. VI. Studies on the Biosynthesis of Dhurrin, the Cyanogenic Glucoside of *Sorghum vulgare* 3223
GANDER, J. E. Incorporation of C^{14} into *p*-Hydroxymandelonitrile-β-glucose and other Phenolic Substances in Sorghum Seedlings 3229
KIMBERG, DANIEL V., AND K. LEMONE YIELDING. Pyruvate Kinase. Structural and Functional Changes Induced by Diethylstilbestrol and Certain Steroid Hormones 3233
AMELUNXEN, R., AND SANTIAGO GRISOLIA. The Mechanism of Triosephosphate Dehydrogenase Inactivation by Reduced Diphosphopyridine Nucleotide 3240
KITZ, R., AND IRWIN B. WILSON. Esters of Methanesulfonic Acid as Irreversible Inhibitors of Acetylcholinesterase 3245
STRITTMATTER, PHILIPP. Direct Hydrogen Transfer from Reduced Pyridine Nucleotides to Microsomal Cytochrome b_5 Reductase 3250
GRAAE, JOHN, AND AGNAR P. MYGAARD. The Kinetics of Yeast D-Lactic Cytochrome *c* Reductase Studied by Means of Integrated Velocity Equations 3255
SACKTOR, BERTRAM, AND ARTHUR DICK. Pathways of Hydrogen Transport in the Oxidation of Extramitochondrial Reduced Diphosphopyridine Nucleotide in Flight Muscle 3259
FLEISCHER, SIDNEY, GERALD BRIERLEY, HERMAN KLOUWEN, AND DAVID B. SLAUTTERBACK. Studies of the Electron Transfer System. XLVII. The Role of Phospholipids in Electron Transfer 3264
McGUINNESS, E. T., AND W. W. WAINIO. Cytochrome *c* Oxidase. I. Nature of the Inhibition by Cytochrome *c* 3273
ROSE, ZELDA B., AND E. RACKER. Formaldehyde Dehydrogenase from Bakers' Yeast 3279
NEWTON, JACK W. A Disulfide Photoreduction System in Chromatophores of *Rhodospirillum rubrum* 3282
KUPKE, DONALD W. Correlation of a Soluble Leaf Protein with Chlorophyll Accumulation 3287
KROGMANN, DAVID W., AND EDWIN OLIVERO. The Specificity of Plastoquinone as a Cofactor for Photophosphorylation 3292
VAN SLYKE, DONALD D., AND JOHN PLAZIN. Determination of Carbon and Its Radioactivity. IV. Transfer of CO_2 to Counting Tubes without Use of Liquid Nitrogen 3296
NORONHA, JOHN M., AND MILTON SILVERMAN. Distribution of Folic Acid Derivatives in Natural Material. I. Chicken Liver Folates 3299

Preliminary Communications

SEGAL, HAROLD L., R. G. ROSSO, SARAH HOPPER, AND MORTON M. WEBER. Direct Evidence for an Increase in Enzyme Level as the Basis for the Glucocorticoid-induced Increase in Glutamic-Alanine Transaminase Activity in Rat Liver PC3303
FRESCO, JACQUES R., AND DER-FEN SU. Polynucleocleotides. IV. Synthesis of Polyriboguanylic Acid Catalyzed by Polynucleotide Phosphorylase PC3305
BOYER, P. D., M. DELUCA, K. E. EBNER, D. E. HULTQUIST, AND J. B. PETER. Identification of Phosphohistidine in Digests from a Probable Intermediate of Oxidative Phosphorylation PC3306
BRESLOW, ESTHER. Role of the Heme in the Titration of Sperm Whale Myoglobin PC3308
MALEY, GLADYS F., AND FRANK MALEY. Nucleotide Interconversions. IX. The Regulatory Influence of Deoxycytidine 5′-Triphosphate and Deoxythymidine 5′-Triphosphate on Deoxycytidylate Deaminase PC3311
WEISSBACH, ARTHUR, AND DAVID KORN. The Effect of Lysogenic Induction on the Deoxyribonucleases of *Escherichia coli* K12λ PC3312

NOVEMBER 1962

CORRECTIONS 3315

FROESCH, E. R., AND J. L. GINSBERG. Fructose Metabolism of Adipose Tissue. I. Comparison of Fructose and Glucose Metabolism in Epididymal Adipose Tissue of Normal Rats 3317

ROSE, IRWIN A., R. KELLERMEYER, RUNE STJERNHOLM, AND HARLAND G. WOOD. The Distribution of C^{14} in Glycogen from Deuterated Glycerol-C^{14} as a Measure of the Effectiveness of Triosephosphate Isomerase *in Vivo* 3325

GOLDMAN, DEXTER S., AND FRANK A. LORNITZO. Enzyme Systems in the Mycobacteria. XII. The Inhibition of the Transglycosidase-catalyzed Formation of Trehalose 6-Phosphate 3332

JIANG, NAI-SIANG, AND D. P. GROTH. Polycarboxylic Acid Activation of Rat Liver Deoxyribose Phosphate Aldolase 3339

SHANNON, LELAND M., AND ABRAHAM MARCUS. γ-Methyl-γ-hydroxy-α-ketoglutaric Aldolase. I. Purification and Properties 3342

MARCUS, ABRAHAM, AND LELAND M. SHANNON. γ-Methyl-γ-hydroxy-α-ketoglutaric Aldolase. II. Studies with Pyruvate-C^{14} 3348

VAUGHAN, MARTHA. The Production and Release of Glycerol by Adipose Tissue Incubated *in Vitro* 3354

FUKUSHIMA, DAVID K., H. LEON BRADLOW, LEON HELLMAN, AND T. F. GALLAGHER. Isolation and Characterization of 18-Hydroxy-17-ketosteroids 3359

ULICK, STANLEY, AND KATHRYN KUSCH VETTER. Identification of Two C_{18} Oxygenated Corticosteroids Isolated from Human Urine 3364

BYERS, SANFORD O., MEYER FRIEDMAN, AND TOSHIKO SUGIYAMA. Mechanism Underlying Phosphatide-induced Hypercholesterolemia 3375

FRANTZ, IVAN D., JR., AJITKUMAR T. SANGHVI, AND R. B. CLAYTON. Detection of a Sterol with the Probable Structure $\Delta^{5,7,24}$-Cholestatrien-3β-ol in the Intestinal Wall of Guinea Pigs Treated with Triparanol ... 3381

SAROFF, H. A., AND WILLIAM R. CARROLL. The Binding of Chloride and Sulfate Ions to Ribonuclease 3384

GILES, C. H., AND R. B. MCKAY. Studies in Hydrogen-bond Formation. XI. Reactions between a Variety of Carbohydrates and Proteins in Aqueous Solutions. 3388

TOMIZAWA, HENRY H. Properties of Glutathione-insulin Transhydrogenase from Beef Liver 3393

MARGOLIASH, E., AND J. LUSTGARTEN. Interconversion of Horse Heart Cytochrome *c* Monomer and Polymers .. 3397

SUNDBY, F. Separation and Characterization of Acid-induced Insulin Transformation Products by Paper Electrophoresis in 7 M Urea 3406

DRABIKOWSKI, W., AND J. GERGELY. The Effect of the Temperature of Extraction on the Tropomyosin Content in Actin 3412

HERSKOVITS, THEODORE T., AND MICHAEL LASKOWSKI, JR. Location of Chromophoric Residues in Proteins by Solvent Perturbation. II. Tyrosyls in Ovomucoid 3418

KORN, EDWARD D. The Kinetics of the Inhibition of Lipoprotein Lipase by Polyanions and Polycations ... 3423

COLEMAN, JOSEPH E., AND BERT L. VALLEE. Apocarboxypeptidase-substrate Complexes 3430

MARUYAMA, KOSCAK, AND SHIZUO WATANABE. The Role of Magnesium in the Superprecipitation of Myosin B. 3437

BACHRACH, URIEL. Spermidine Oxidase from *Serratia marcescens* 3443

BRAHAMS, JERZY, AND CYRIL M. KAY. The Role of Solvent-induced Conformational Changes on the Enzymatic Adenosine Triphosphatase Activity of Cardiac Myosin A 3449

MORELL, ANATOL G., PHILIP AISEN, AND I. HERBERT SCHEINBERG. Is Ceruloplasmin an Ascorbic Acid Oxidase? 3455

EPSTEIN, CHARLES J., CHRISTIAN B. ANFINSEN, AND MICHAEL SELA. The Properties of Poly-DL-alanyl Trypsin and Poly-DL-alanyl Chymotrypsin 3458

EPSTEIN, CHARLES J., AND CHRISTIAN B. ANFINSEN. Reversible Reduction and Reoxidation of Poly-DL-alanyl Trypsin 3464

PRICE, VINCENT E., WILLIAM R. STERLING, VINCENT A. TARANTOLA, ROBERT W. HARTLEY, JR., AND MILOSLAV RECHCIGL, JR. The Kinetics of Catalase Synthesis and Destruction *in Vivo* 3468

GOLDSTONE, ALFRED, AND ELIJAH ADAMS. Metabolism of γ-Hydroxyglutamic Acid 3476

MATTOON, JAMES R., AND ROGER D. HAIGHT. Glutaric Acid Accumulation by a Lysine-requiring Yeast Mutant 3486

POPENOE, EDWIN A., AND DONALD D. VAN SLYKE. The Formation of Collagen Hydroxylysine 3491

KENNEY, FRANCIS T. Induction of Tyrosine-α-ketoglutarate Transaminase in Rat Liver. IV. Evidence for an Increase in the Rate of Enzyme Synthesis 3495

WYNN, JAMES, AND ROBERT GIBBS. Thyroxine Degradation. II. Products of Thyroxine Degradation by Rat Liver Microsomes 3499

ZANNONI, VINCENT G., G. A. JACOBY, S. E. MALAWISTA, AND BERT N. LA DU. The Effect of Folic Acid on Tyrosine Metabolism in Guinea Pigs 3506

THOMSON, ROBERT Y., GLORIA T. SCOTTO, AND GEORGE BOSWORTH BROWN. On the Conversion of Cytidine to Deoxycytidine in the Rat 3510

REICHARD, PETER. Enzymatic Synthesis of Deoxyribonucleotides. I. Formation of Deoxycytidine Diphosphate from Cytidine Diphosphate with Enzymes from *Escherichia coli* 3513

BLACKLOW, ROBERT S., AND LEONARD WARREN. Biosynthesis of Sialic Acids by *Neisseria meningitidis* 3520

WARREN, LEONARD, AND ROBERT S. BLACKLOW. The Biosynthesis of Cytidine 5′-monophospho-*N*-acetylneuraminic Acid by an Enzyme from *Neisseria meningitidis*. 3527

DRUMMOND, GEORGE I., N. T. IYER, AND JACQUELINE KEITH. Hydrolysis of Ribonucleoside 2′,3′-Cyclic Phosphates by a Diesterase from Brain 3535

CHANCE, BRITTON, AND BUNJI HAGIHARA. Activation and Inhibition of Succinate Oxidation following Adenosine

Diphosphate Supplements to Pigeon Heart Mitochondria ... 3540
REYNOLDS, E. S., R. E. THIERS, AND B. L. VALLEE. Mitochondrial Function and Metal Content in Carbon Tetrachloride Poisoning ... 3546
GREENBERG, LEONARD J., AND DAVID GLICK. Studies in Histochemistry. LXIX. Quantitative Histological Distribution of Totally Activated Phosphorylase in the Rat Adrenal and the Influence of Adrenocorticotropic Hormone *in Vivo* ... 3552
DEISS, WILLIAM P., JR., LEILA B. HOLMES, AND C. CONRAD JOHNSTON, JR. Bone Matrix Biosynthesis *in Vitro*. I. Labeling of Hexosamine and Collagen of Normal Bone ... 3555
JOHNSTON, C. CONRAD, JR., WILLIAM P. DEISS, JR., AND EDWARD B. MINER. Bone Matrix Biosynthesis *in Vitro*. II. Effects of Parathyroid Hormone ... 356
SMITH, LOUIS C., JOANNE M. RAVEL, SANDRA R. LAX, AND WILLIAM SHIVE. The Control of 3-Deoxy-D-*arabino*-heptulosonic Acid 7-Phosphate Synthesis by Phenylalanine and Tyrosine ... 356
Preliminary Communications
MCKENZIE, J. M. Fractionation of Plasma Containing the Long Acting Thyroid Stimulator ... PC3571
GREEN, D. W., F. S. MATHEWS, AND ALEXANDER RICH. The Crystal and Molecular Structures of *N*-Methyluracil ... PC3573
MATSUBARA, HIROSHI, AND EMIL L. SMITH. The Amino Acid Sequence of Human Heart Cytochrome *c* ... PC3575

DECEMBER 1962

ESPADA, JOAQUIN. Enzymic Synthesis of Adenosine Diphosphate Glucose from Glucose 1-Phosphate and Adenosine Triphosphate ... 3577
MUNTZ, JOHN A., AND MICHAEL VANKO. The Metabolism of Intraportally Injected Fructose in Rat Liver *in Vivo* ... 3582
FANSHIER, D. W., L. K. GOTTWALD, AND E. KUN. Enzymatic Synthesis of Monofluorocitrate from β-Fluorooxaloacetate ... 3588
BONSIGNORE, A., S. PONTREMOLI, G. MANGIAROTTI, A. DE FLORA, AND M. MANGIAROTTI. A Direct Interconversion: D-Fructose 6-Phosphate ⇌ Sedoheptulose 7-Phosphate and D-Xylulose 5-Phosphate Catalyzed by the Enzymes Transketolase and Transaldolase ... 3597
SANDERSON, ARNOLD R., JACK L. STROMINGER, AND STANLEY G. NATHENSON. Chemical Structure of Teichoic Acid from *Staphylococcus aureus*, Strain Copenhagen ... 3603
WANG, CHIH H., AND JULIA K. KRACKOV. The Catabolic Fate of Glucose in *Bacillus subtilis* ... 3614
HEIMBERG, MURRAY, IRA WEINSTEIN, GUINN DISHMON, AND ALLEN DUNKERLEY. The Action of Carbon Tetrachloride on the Transport and Metabolism of Triglycerides and Fatty Acids by the Isolated Perfused Rat Liver and Its Relationship to the Etiology of Fatty Liver ... 3623
BREMER, JON. Carnitine in Intermediary Metabolism. The Metabolism of Fatty Acid Esters of Carnitine by Mitochondria ... 3628
KOSOW, DAVID P., SHU CHIN HUANG, AND M. DANIEL LANE. Propionyl Holocarboxylase Synthesis. I. Preparation and Properties of the Enzyme System ... 3633
SPENCER, ALICE F., AND JOHN M. LOWENSTEIN. The Supply of Precursors for the Synthesis of Fatty Acids ... 3640
DEYKIN, DANIEL, AND DEWITT S. GOODMAN. The Hydrolysis of Long Chain Fatty Acid Esters of Cholesterol with Rat Liver Enzymes ... 3649
DANIELSSON, HENRY, PETER ENEROTH, KJELL HELLSTRÖM, AND JAN SJÖVALL. Synthesis of Some 3β-Hydroxylated Bile Acids and the Isolation of 3β,12α-Dihydroxy-5β-cholanic Acid from Feces. Bile Acids and Steroids 123 ... 3657
TONOMURA, YUJI, SHOTARO KITAGAWA, AND JUNKO YOSHIMURA. The Initial Phase of Myosin A-Adenosine Triphosphatase and the Possible Phosphorylation of Myosin A ... 3660
OGLE, JAMES D., RALPH B. ARLINGHAUS, AND MILAN A. LOGAN. 3-Hydroxyproline, a New Amino Acid of Collagen ... 3667
GLAZER, A. N., AND K. ROSENHECK. Solvent and Conformational Effects on the Ultraviolet Spectra of Polypeptides and Substituted Amides ... 3674
STELOS, PETER, AND DAVID PRESSMAN. Papain Digestion of Antigen-Antibody Precipitates ... 3679
FLANAGAN, BARRY, AND GEORGE NICHOLS, JR. Metabolic Studies of Bone *in Vitro*. IV. Collagen Biosynthesis by Surviving Bone Fragments *in Vitro* ... 3686
RICHARDS, FREDERIC M., AND A. D. LOGUE. Changes in Absorption Spectra in the Ribonuclease-S System ... 3693
CLARK, J. M., JR., AND JAIME P. EYZAGUIRRE. Tyrosine Activation and Transfer to Soluble Ribonucleic Acid. I. Purification and Study of the Enzyme of Hog Pancreas ... 3698
NEMETH, ANDREW M. The Effect of 5-Fluorouracil on the Developmental and Adaptive Formation of Tryptophan Pyrrolase ... 3703
RENDI, RENZO, AND SEVERO OCHOA. Species Specificity in Activation and Transfer of Leucine from Carrier Ribonucleic Acid to Ribosomes ... 3707
RENDI, RENZO, AND SEVERO OCHOA. Effect of Chloramphenicol on Protein Synthesis in Cell-free Preparations of *Escherichia coli* ... 3711
FEIGELSON, PHILIP, AND OLGA GREENGARD. Immunochemical Evidence for Increased Titers of Liver Tryptophan Pyrrolase during Substrate and Hormonal Enzyme Induction ... 3714
LEVINE, ELLIOT M., AND SOFIA SIMMONDS. Further Studies on Metabolite Uptake by Serine-Glycine Auxotrophs of *Escherichia coli* ... 3718
SHEDLOVSKY, ALEXANDRA E., AND BORIS MAGASANIK. A Defect in Histidine Biosynthesis Causing an Adenine Deficiency ... 3725
SHEDLOVSKY, ALEXANDRA E., AND BORIS MAGASANIK. The Enzymatic Basis of an Adenine-Histidine Relationship in *Escherichia coli* ... 3731
DUERRE, JOHN A. A Hydrolytic Nucleosidase Acting on

S-Adenosylhomocysteine and on 5′-Methylthioadenosine 3737

Scarano, Eduardo, Luisa Bonaduce, and Benita De Petrocellis. The Enzymatic Aminohydrolysis of 4-Aminopyrimidine Deoxyribonucleotides. III. Purification and Properties of 2′-Deoxyribosyl 4-Aminopyrimidone-2,5′-phosphate Aminohydrolase from Monkey Liver 3742

Hurwitz, Jerard, J. J. Furth, Monika Anders, and Audry Evans. The Role of Deoxyribonucleic Acid in Ribonucleic Acid Synthesis. II. The Influence of Deoxyribonucleic Acid on the Reaction 3752

McCully, Kilmer S., and G. L. Cantoni. Studies on Soluble Ribonucleic Acid of Rabbit Liver. VI. Frequencies of Base Sequences Revealed by Specific Enzymatic Hydrolysis 3760

Bertles, John F., and William S. Beck. Biochemical Aspects of Reticulocyte Maturation. I. Fate of the Ribonucleic Acid 3770

Kahan, Fred M., and Jerard Hurwitz. The Role of Deoxyribonucleic Acid in Ribonucleic Acid Synthesis. IV. The Incorporation of Pyrimidine and Purine Analogues into Ribonucleic Acid 3778

August, J. T., Priscilla J. Ortiz, and Jerard Hurwitz. Ribonucleic Acid-dependent Ribonucleotide Incorporation. I. Purification and Properties of the Enzyme 3786

Wahba, Albert J., and Morris Friedkin. The Enzymatic Synthesis of Thymidylate. I. Early Steps in the Purification of Thymidylate Synthetase of *Escherichia coli* 3794

Pastore, Edward J., and Morris Friedkin. The Enzymatic Synthesis of Thymidylate. II. Transfer of Tritium from Tetrahydrofolate to the Methyl Group of Thymidylate 3802

Friedkin, Morris, Elizabeth J. Crawford, Elaine Donovan, and Edward J. Pastore. The Enzymatic Synthesis of Thymidylate. III. The Further Purification of Thymidylate Synthetase and Its Separation from Natural Fluorescent Inhibitors 3811

Donaldson, Kenneth O., and John C. Keresztesy. Naturally Occurring Forms of Folic Acid. III. Characterization and Properties of 5-Methyldihydrofolate, an Oxidation Product of 5-Methyltetrahydrofolate ... 3815

Massey, V., T. Hofman, and Graham Palmer. The Relation of Function and Structure in Lipoyl Dehydrogenase 3820

Friedland, Ira M., Laphalle Fuller, and L. S. Dietrich. Nicotinic Acid and Nicotinamide Metabolism in Ascites Cells *in Vitro* 3829

Jorgensen, Eugene C., Peter A. Lehman, Cyrus Greenberg, and Nicholas Zenker. Thyroxine Analogues. VII. Antigoitrogenic, Calorigenic, and Hypocholesteremic Activities of Some Aliphatic, Alicyclic, and Aromatic Ethers of 3,5-Diiodotyrosine in the Rat 3832

Preliminary Communications

Nathenson, Stanley G., and Jack L. Strominger. Enzymatic Synthesis and Immunochemistry of *N*-Acetylglucosaminylribitol Linkages in the Teichoic Acids of *Staphylococcus aureus* Strains PC3839

Goldberg, Melvin L., and Efraim Racker. Formation and Isolation of a Glycolaldehyde-Phosphoketolase Intermediate PC3841

Hashimoto, Yukichi, T. Yamano, and H. S. Mason. An Electron Spin Resonance Study of Microsomal Electron Transport PC3843

Srinivasan, N. G., John J. Corrigan, and Alton Meister. D-Serine in the Blood of the Silkworm *Bombyx mori* and Other Lepidoptera PC3844